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Photo. A. Meyrcke

MT. FRESHFIELD
[See Page 335]

THE

AMERICAN ALPINE JOURNAL

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The Ascent of Mount Bona

ALLEN CARPÉ

THE St. Elias range, which borders the coast of the Gulf of Alaska from Cross Sound to a somewhat indefinite boundary with the Chugach mountains west of Mt. St. Elias, contains some of the grandest elevations of our continent. A remarkably high relief, combined with intensive glaciation, produces a scenic type not easily matched anywhere else in the world. Although the ice cover has diminished in recent times it is still well-nigh Arctic in extent; but its character is entirely Alpine.

The range has its highest development in the district north of the Malaspina glacier. Here, also, it achieves its greatest extension inland, being bounded on the north by the White River and to the west thereof approximately by the valley of the Nizina River, beyond which rise the great summits of the Wrangell mountains. In the region so defined, Mt. Logan and Mt. St. Elias are the highest summits. Farther north Mt. Lucania attains 17,147 ft.; this is followed by Mt. Steele (16,644 ft.), Mt. Bona (16,421 ft.), and Mt. Wood (15,885 ft.).

These peaks are scattered somewhat irregularly over an area roughly 10,000 square miles in extent,[1] for the most part heavily glaciated, with valley levels of only a few thousand feet. Each major summit commands a considerable system of glaciers and subsidiary ranges. Mountaineering is still concerned with the attainment of the primary massifs. The ascent of each of these may entail

[1] A quadrangle drawn from Icy Cape northward to Skolai pass, thence east across the northern face of the Natazhat range to the Donjek and somewhat east of south through the Kuskawalsh glacier to Mts. Alverstone, Hubbard and Seattle, closing along the shore line of the Malaspina glacier, embraces about 10,000 square miles and will include all the prominent peaks of the St. Elias group proper. The Alpine area of the contiguous Wrangell range, is about half as large.

weeks of work and travel beyond the snow-line, of communion with those higher mountain fastnesses which we know less intimately in lesser ranges. Herein lies perhaps the appeal of these big climbs; for none so far accomplished affords the interest of serious "technical" difficulties. They require rather the ordinary precautions of travel on ice and snow, and the organization of a party for sustained effort. Given a competent method of attack, success depends really on time, supplies, and transportation.

From this standpoint Mt. Bona seemed a feasible goal for a trip in which Terris Moore asked me to join him last summer. We could not leave the eastern seaboard until the first of June, and there had been no opportunity for advance preparations in Alaska. This ruled out more remote objectives, like Mt. Lucania. Mt. Bona, we knew, was situated near the northern limit of the St. Elias range and was therefore open to approach from that side. Its immediate domain is defined by the Russell glacier on the north and the Klutlan glacier on the east, both sources of the White River, and on the south and west by tributaries of the Chitina and Nizina rivers.

On June 12 we reached the little town of McCarthy. Andrew Taylor, companion and friend of former seasons, had bespoken the necessary pack horses, gasoline for the stoves and other requisites. A sleigh had been ordered from Chitina for use on the lower ice. The morning of the 15th saw us ensconced with our baggage on a motor truck which carried us at a good pace over the Nizina bridge and thence to Murie's roadhouse, below the Dan Creek mines. Here Harry Boyden's horses met us.

Our immediate objective was Skolai pass. The Russell glacier is accessible by this curious divide, which results from the capture of the head basin of Skolai Creek by a lateral overflow of the Russell glacier some six miles above its snout. The main ice stream, below this point, turns somewhat east of north, while Skolai Creek flows westward to the Nizina.

There are two routes from McCarthy to Skolai pass. The shorter one, usually traveled in the summer months, ascends the north fork of the Chitistone to Chitistone pass, whence one may descend rather steeply into the head basin of Skolai valley. This route was still closed to us by late snows. The longer "winter trail" continues farther up the Nizina and ascends Skolai Creek directly to its summit. Both Chitistone River and Skolai Creek are tributaries to the Nizina.

In these valleys glacial processes on a large scale are still active. As lately as 1912 the forks of the Chitistone were blocked by the Chitistone glacier, flooding the deep canyon of the north branch. The Nizina glacier descends now some distance below the mouth of Skolai Creek; the lower part of Skolai valley is annually converted by it into a wide and deep lake, several miles in length, which eventually finds an outlet under the ice. This lake basin was almost empty when we passed through it, but was filling rapidly from the spring thaw. Stranded icebergs of the previous season dotted the gravel plain, and the margins of the valley were lined with a series of benches, extending several hundred feet up the hillsides, marking the shore lines of different years. Deeply washed-out gullies testified to the force of the flow when the lake is drained. The bursting of this glacial lake sends destructive floods far down the Nizina. The head of Skolai valley was formerly occupied by a shallow lake scooped out by the Russell glacier. In the last few years this has largely silted up. The ice has also subsided greatly. A refuge cabin is maintained by the Alaska Road Commission on the margin of the lake bed, where there is swampy ground and some growth of grass for the horses.

The first two days' travel brought us to the Nizina glacier, and the 17th was spent in crossing it. We emerged on to mossy, heathery meadows, dotted with wildflowers and bluebells, where the trail meandered among willows still in the catkins. A long march on the next day unfolded delightful and varied scenes, dominated by the majestic Mt. Regal (13,750 ft.) rising behind us from the Nizina glacier—a beautiful peak, at the eastern front of the Wrangell mountains. Serrated ranges of lesser altitude enclosed our route on either side. As we gained elevation soft snow drifts made difficult work for the horses, and we finally abandoned the greater part of our loads in order to reach the shelter cabin before night. On the 19th the supplies were brought up while others of us collected willow wands for trail markers, and cut a stout willow pole for the sleigh. Finally, on the 20th of June, the horses carried our baggage several miles up the Russell glacier and set us down on a moraine ridge, near the west margin of the ice.

The next six days were occupied in hauling our supplies to the base of the mountain. We had, at the outset, probably between 500 and 600 pounds. Our procedure was to put the smaller half of this load ahead as far as possible and cache it. In so doing, a trail

was broken through the soft snow and slush and well trodden down with the snowshoes. This froze sufficiently over night to provide easier hauling the next day. On the second morning we broke camp and carried the balance of the outfit some distance beyond the cache, until the thawing snow again stopped us. On the third day we had a good track for bringing up the cache. We continued with it and again cached it some distance in advance of the camp. This was continued with two intermediate camps before reaching the head wall of the Russell glacier, which is the great north face of Mt. Bona. The distance between camps averaged about four miles. The weather favored us save on the 24th, when we followed our willows and the snowshoe tracks through mist and snow.

We were now at an altitude of 8,700 ft., with enough provisions for a month's campaign. The mountain rose above us in a broad wall of terraced ice, nearly 8,000 ft. high, divided by many icefalls into an intricate network of ledges and vertical risers. At the right, the sky line dipped to a saddle some 13,000 ft. high. The ridge lifted out of this in a steep pitch, so steep that sheets of snow slid off repeatedly from it during our march up the lower glacier, exposing a tracery of rock.

On the 27th we started up, carrying packs of about fifty pounds. At the lower elevations we had to travel in the very early hours, from considerations of safety and to secure passable going; but above 10,000 or 11,000 ft. it does not thaw much. Ascending an avalanche fan between two icefalls, we attained a broad terrace which carried out to the right across the face. This gradually steepened and merged into another ascent, the top of which was constricted by crevasses encroaching from either side. The snow throughout was soft and the passage of the steepest part quite ticklish. As we looked back, down the valley, the winding course of the glacier was framed against the impressive outlines of séracs and ice cliffs which seemed almost to overhang our path; actually, however, we had little difficulty in keeping free of the debris track. To the east, the outlook across the flank of the mountain revealed increasingly the magnificent scale of the peak.

Near the top of of this draw, where a crack forced a long return to the left, we left our packs the first day. On the 28th we brought up one tent and more supplies. The crevasses which had terminated the direct ascent occurred at the very top of the steepest pitch, so that its lower lip formed a crest of ice partly buried in

Photo. A. Carpé

7800 FT. CAMP BELOW NORTH FACE OF MT. BONA

Photo. A. Carpé

LOOKING DOWN RUSSELL GLACIER FROM MT. BONA

Photo. Terris Moore

APPROACHING THE MOUNTAIN

snow. We traversed carefully along this until a crossing was found, then continued up an open slope with few crevasses, in the general direction of the saddle, to a height of some 10,300 ft. Here the ascent became almost too steep for snowshoes, yet without them there was no footing, and the route towards the saddle was not certain. Even from far down the glacier, a formation of large crevasses hid the terrain below the saddle. Now we were so close under them that the view was entirely blocked. We dug out a tent site and set up the camp, then went back for the cached loads.

The next day was devoted to an investigation of the route to the saddle. Above us, the valley edge of great crevasses bulged up to curious corniches and pinnacles of ice which hid everything beyond and made it appear uncertain whether we should get through them. One of us circled far out to the west and circumvented at least the main system of cracks; meanwhile the others encountered little opposition in a direct ascent and succeeded in establishing a route all the way to the saddle. Following this, with the camp equipment and a few days' supplies, we established a camp in the saddle on June 30.

It would be difficult to find a location to which the term "saddle" is more apt. The contours of the ground were almost exactly those of a riding saddle. The slopes coming up from either side of the ridge tapered off gradually to a level area in the center. The ascending slopes rose out of this in equally smooth and uniform curves; but the one leading toward the main peak soon gathered steepness and became somewhat narrower. It rose to a considerable bulge some two thousand feet above us, hiding the summit and the ridge beyond. We were on a spur which divides the main basin of the Russell glacier from a western tributary of the same. Beyond the head of this tributary another spur jutted out toward the Chitistone glacier and supported two very striking peaks, probably 14,000 or 15,000 ft. high. They are located in an unsurveyed area. The two spurs join higher up in the true west ridge of Mt. Bona.

At this height, in good weather, there is crisp, wind-blown snow under foot. The nights are cold (7° F. on June 30), but the lack of thawing during the day makes for little glazed crust. More common is a dry, compact, crystalline surface, not bad for walking, which is sometimes ridged by the wind into the curious forms which Arctic travelers call "sastrugi." Snowshoes had been left below.

We relied on crampons for the remainder of the ascent. Nor did we take the rope above the saddle.

The temperature had risen to 12° by 5 A.M. of July 1. The weather was clear. We left the tent about 7 A.M., but had scarcely got away when clouds began to drift in, forcing a return. An hour's wait brought little change; but the mists were thin overhead and we hoped to get above them. We steered as best we could for the highest part of the rise. Presently we came abreast of the first outcropping rocks. Veering to the right of them, we followed lanes of harder snow and after a climb of perhaps 1,500 ft. approached the bulging shoulder of the ridge. Almost imperceptibly we had emerged from the mists. They lay below us now, a vast blanket of clouds stretching away to the horizon. Above them, sixty miles distant, the peak of Mt. Blackburn shone white in the clear sky. A second summit, lower or more distant, just topped the clouds. We thought of Mt. Sanford; but later examination of the map makes it seem doubtful that it could be seen from this altitude.

The ridge continued to mount, less steeply, hiding everything to the east and south. By noon we attained a pronounced hump from which we had our first view in that direction. The summit rose bravely from a depression at our feet: the top was perhaps 1,000 ft. above us and less than a mile distant. To the right, on the far horizon, Mt. Logan and St. Elias were recognized with a thrill. The clouds were surging about the 16,000-ft. level on the north face of Logan, and we ourselves were no longer much above them. We had been exposed to a cold wind ever since we got above the cloud level. Now it seemed to increase in force. Little wisps of powdery snow drove along close to the ground, despite the fact that there was not much loose snow left on these exposed parts of the mountain after the prolonged spell of good weather. Sullen streamers of cloud curled about the upper reaches of the peak, moving rapidly. The whole picture was reminiscent of certain trying experiences with high-level blizzards on Mt. Logan. We were not committed to a dash for the summit. We had time and supplies to wait out the weather; several days' provisions at the high camp, enough for a week or ten days readily accessible in a cache at 10,300 ft., easily as much more at the base camp. We returned to the saddle to await a better day.

In the afternoon Terris went down to the cache for a load of supplies and some personal things. While he was gone the weather

Photo, A. Carpé

CLOUDS TO THE WEST ON DAY OF FINAL ASCENT

Photo. Terris Moore

A HALT WHILE PACKING AT ABOUT 11,500 FT.

turned worse, very thick and some fall of snow, but not cold. We were worried a little about the possibility of his losing the trail, which was pretty much snowed over; but he returned safely in less than four hours. The route was marked with willow stakes every thirty paces, with additional markers at turns and where crevasses were crossed.

Snow fell intermittently during the evening and night. The lowest temperature—only 18°—was registered in the early evening, thereafter there was a warm wind accompanied by snow and dense fog. The indications were decidedly unpromising, but to our surprise there were signs of improvement in the morning. The western sky remained dark and threatening. Clouds filled the valley of the Russell glacier at our feet and covered the mountains to the north. The outlook from our tent was very impressive.

At 11.30 we made another start for the summit. The going was excellent after we got out of the saddle. Wind had swept the steep slopes entirely free of the night's snowfall. We could follow the crampon marks of the preceding morning. The sun shone, and there was little wind. We felt warmer than on the previous day, although the thermometer presently indicated 4° F. In the west, immense cloud structures piled up above the Wrangell mountains and provided throughout the day the most striking feature of the view. Judging roughly by the height of the mountains, some of the formations must have towered 25,000 ft. in the air. After a rather threatening sky in the early morning, the clouds seemed at first quite static and we felt safely removed from them. As the day progressed, however, they reached out like an advancing tide toward the outlying peaks of the Chitistone basin, towering so high above them that they seemed constantly in danger of being engulfed. At the same time, light streamers began to form about the ridge of Mt. Bona. Beyond, to the south, the valleys leading to the Chitina were filled.

At 4.30 we reached the hump of the preceding day. We descended from it several hundred feet to a considerable stretch of undulated terrain which intervened before the base of the final cone. Here a few crevasses required care, being curiously crusted over so that there was little visual sign of their size and direction. We stopped a moment in a little pulpit-like platform which looked out toward the south; like Mt. Logan and Mt. Lucania, the southern face of Bona exposes steep, rocky cliffs, while the northern

A HALT WHILE PACKING AT ABOUT 11,500 FT.

slopes are more rounded. The rocks (which we did not attain) were of a reddish color, presumably of volcanic origin. This declivity on the south gives the peak of Bona a fine, upstanding appearance when viewed along the ridge.

In the foreground, slightly to the west of us, was a peak belonging clearly to the Bona massif, perhaps the one shown on the Boundary map (general sheet) as 15,100 ft. The valleys of the Hawkins and Barnard glaciers, great tributaries to the upper course of the Chitina, lay beyond it, but we saw nothing of them save a sea of billowing cloud. Mt. Logan was very clear, although 75 miles distant, and we could trace the route of its ascent. It was interesting to note that its eastern summit appeared much lower than the other two.

There was an area of accumulated soft snow which slowed us up a good deal as we approached the final ascent. Good footing was regained when we emerged on to steeper slopes. One or two large cracks raised a question about the route, but they were crossed without difficulty. At 6.30 the slope eased off and, almost before we expected it, we stood on the summit of Mt. Bona.

Terris put out the thermometer, which registered just zero. The outlook was expanded but little from that enjoyed during the climb, for the Natazhat group was hidden and we saw nothing in that direction save glimpses of the lower summit of our own peak, smothered under driving clouds. Occasionally we, too, were shut in by them. At other times the sun broke through, and we sought to recognize the great mountains to the southeast of us: Bear, Lucania, Wood, etc. Of these, Mt. Lucania was the most distinct.

We started the descent at 7.15. Most of it was down-hill, and the camp was regained about 9.30. The next morning was cloudy. We broke camp and started down in heavy mist. At the cache (10,300 ft.) we picked up a few things, abandoning the surplus food and gasoline. We continued down, picking our way among the crevasses in the fog. The footing became worse as we lost altitude, the last stretch above the base camp being of a wet, coarse, granular snow which reminded me of nothing so much as a similar descent to Cascade Camp on the return from Mt. Logan.

The night was warm (27° F.) and several inches more snow fell. The sun came out in the morning, however, and it was clear overhead, although mists hung low in the valley. We abandoned

Photo. Ferris Moore

THE SUMMIT OF MT. BONA

Photo. A. Carpé

ON THE SUMMIT OF MT. BONA

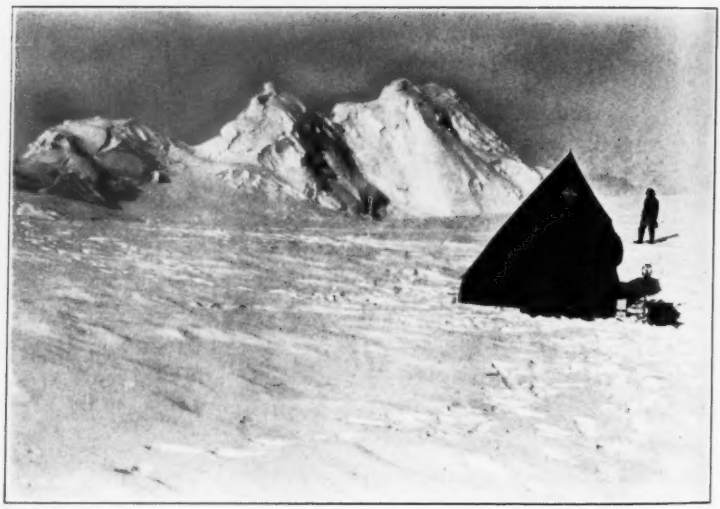

Photo. A. Carpé

13,000 FT. CAMP AND PEAKS TOWARDS THE SOUTH WEST

all unnecessary food, but still had a good load on the sleigh. The going was unexpectedly easy, the sleigh holding up well on the snowshoe track. We passed our first way camp on the descent soon after noon. Farther down, we got into a bad slush area surrounding a surface lake. The head of the lake ran back into crevasses adjoining the medial moraine, where we could not go with the sleigh. The outflow channel ran between high, slushy banks. We maneuvered the sleigh into a position to haul it across, but when we got it in motion a piece of the bank collapsed under the weight, damming the channel and throwing the water high against the side of the load. We pulled ahead quickly and upon examination found nothing damaged. We sat down for tea on a high point of the moraine about 4 P.M., then had fair going on bare ice with some snow-filled cracks to the site of our next way camp. We worked along the west marginal moraine towards our starting point, where the horses had set us down two weeks before. Rough ice forced us out into the center of the glacier for a time; but at 8.30 P.M. we brought up opposite the cache and stopped for the night.

Another pull in rain and fog carried us down the last stretch of the glacier. The visibility was so poor that we got into a field of hummocky ice within a mile of our destination, where progress with the sleigh was next to impossible. In the end we abandoned it and proceeded on foot, with our bedding and light packs, to Skolai cabin. The next day, with gradually lifting clouds, we returned to the sleigh and brought it down off the ice. We had farewell glimpses of the summit of Mt. Bona up the glacier. We packed the supplies to the cabin, where Harry Boyden was to pick them up on his next trip to Chisana, and set the sleigh against an old, mossy moraine clear of the ice, for future salvage.

With a return of perfect weather on the 7th we set out on foot for McCarthy. Mountaineering paraphernalia were largely left behind. Our days on the heights were over. We crossed the flat of Skolai basin and climbed 1,000 ft. or so to Chitistone pass, where the snow was melting away rapidly. The warmth of spring was in the air. The Chitistone at first descends gently, among pleasant meadows and mountains not unlike those of the Canadian Rockies. After a few miles, the stream drops into a deep and narrow canyon, while the trail mounts high across steep-cut banks to avoid the cliffs. This passage is called the "Goat Trail" and it is truly an adventurous place, the mountain-side being in places

so steep that it is hard to believe that a horse could stick on it. We did not look at the barometer, but it seems to the writer, in recollection that the ascent could not have been less than 1,500 ft., and the subsequent descent fully 2,500. Yet this is the principal pack route to the once flourishing Chisana district and the White River country! The trail leads out upon high benches overlooking the confluence of the two branches of the Chitistone River, the east branch occupied by the Chitistone glacier in obvious recession. Looking up this valley we saw high, snowy peaks and recognized with a thrill the very slopes of Mt. Bona which we had climbed. There was much more snow now. The precipitation which had come after our descent had evidently not been cleared away by winds: we should have had harder work a week later.

That night we slept on a gravelly flat below the Goat Trail, without tents, among hordes of mosquitoes. It was not difficult to make an early start in the morning. The day's march brought us to Glacier Creek mining camp, where the stream of that name was crossed in a cariole slung on a cable; the Chitistone had been crossed higher up by a similar conveyance. On July 9th we walked to Spruce Point for lunch, on the Nizina River, and in the afternoon to Dan Creek, a total distance of 13 miles, whence the remaining 20 miles to McCarthy were covered in a car sent in response to our telephone call from the mine.

The Traverse of the Grandes Jorasses

GERALDINE I. FITZ-GERALD

THE climbers of this trip comprised myself, with the guides Alfred Couttet and Anatole Bozon, of Chamonix. We left the cosy Cabane de Leschaux at 3.10 A.M. on August 31st, 1930. The night was perfect. Overhead twinkled my old friends the winter constellations. Taking a middle course up the Glacier de Leschaux, we followed smooth ice as far as possible by first bearing to the left, then to the right under the rampart of Pointe Young, thus keeping away from the séracs of Mont Mallet glacier. Bearing still to the right, we ascended the steeper slopes which lead under the advanced buttress of the Dôme de Rochefort. From here on we crossed several snow-bridges. Bearing again to the left, we approached the *rimaye*. It gaped through its glistening teeth; but its snarl proved to be nothing but a threat. We halted for a hasty bite; not caring for an icy seat, we stood, for the wind which precedes the dawn was blowing bitterly cold from the heights. Again we crawled upwards by means of carefully cut steps in the sheer ice.

As recently as last year on the Col du Géant, the superb valley of Courmayeur, flanked by the bulwarks of the Italian Alps, had suddenly appeared to me through shreds of cloud and a stinging blizzard. Today it burst upon me serene and golden in the early light. As before, I was dazzled with its beauty, and could only stare at it in bewilderment, scarcely breathing, while the guides rummaged in their rucksacks for breakfast. We had gained the Col des Grandes Jorasses by 7.15; we left it about twenty-five minutes later.

The west ridge is attacked straight up from the Col, rather towards the north slope. Good holds are plentiful, although apt to be small. We found the rocks ice-coated and cold to grasp; but the rock is solid; no loose or treacherous stones here. Pointe Young was attained at 9.30 A.M. From then on, the climber has only to follow the ridge.[1] As regards rock-work, Pointe Young is perhaps the best part of the expedition. Between it and the next Pointe there are a series of drops punctuated by knife-edges on which we all cheerfully tore our hands. Between Punta Margherita

[1] See *A. J.*, xxvi, p. 245-6.

(4,066 m.) and Punta Elena (4,045 m.) we halted for a twelve o'clock lunch upon a sunny ledge, and emerged later on Pointe Whymper (4,196 m.).

Between the twin summits is a deep notch. We were now ploughing through snow softened by the warm sun. The crust broke up and slid away in miniature avalanches. To gain time, we hung the *corde de rappel* on a little mushroom of ice and skidded down. Huge curling cornices leaned northward toward Chamonix, dangerous, but resplendent against the sky. A short upward pull, and Pointe Walker, the summit (4,208 m.), was reached by 2.30 P.M.

From Pointe Walker the ridge continues in a straight line eastward down to the Col des Hirondelles, some 800 metres below. At first easy, in spite of fresh snow, the rocks soon became ice-coated. Up here, the rock itself is in good condition, but the ledges are littered with débris. Occasional vertical gaps called forth the *corde de rappel.*

It is rather hard to recall the various steps of five continuous hours with one's nose to the rock-wall. It was a succession of gigantic columns, tilted at an agle of about 70° and fluted with rectangular couloirs. These afforded good holds and plenty of friction—almost too much of a certain variety. The famous V-shaped notch (which for a long time blocked climbers on the ascent) we rioted down in a single *rappel* 35 metres long. Here we found the *pitons* left by the guide Adolphe Rey, who made the first ascent in 1927. Mr. Geoffrey Winthrop Young, in writing about this ridge,[3] mentions "a party of speed and power" taking six and one-half hours from the summit to half way down to the V-notch. We felt that the whole ridge should not occupy more than four hours in all.

Ours was a race with daylight. Without the glimmer of an afterglow, the sun dropped from view with an awesome finality, and the first stars sprang out. At 7.40 P.M. we reached the Col des Hirondelles, just in time to peer over its vertical steeps and gauge our descent on to the glacier below.

At this point the awkward dilemma was presented to me whether to continue down in the dark or to bivouac where we were. As both horns looked equally unattractive, I temporized; it would be less draughty farther on. Perched on the only possible ledge

[3] *A. J.*, xxvi, p. 238.

Col de la Brenva

Cime de la Rochefort

Mont Maudit

Cliché Aéro-Photo.

GRANDES JORASSES

Photo. G. I. Fitz-Gerald

POINTE WALKER, WEST SLOPE

about one-fourth of the way down, we still discussed bivouacking during our first meal after eight hours of steady going. For diversion we snarled like puppies over our chicken, supplementing the *pièce de résistance* with what remained at the bottom of the sack: a handful of crumbs mixed with raisins and what-not, a watery tea, and lemon drops in sticky pink and green paper.

Night was now upon us with a vengeance. The rock was completely rotten; crazy fragments of all sizes gave away at the slightest provocation. We could trust to nothing, and yet had to assure ourselves in everything. The rubbish, which we pushed off before us, howled through the darkness like discomforted avenging ghouls. All afternoon we had had to face the rock, telescope into ourselves, seize with our fingers the beading held with the toes and scrape down again to arm's length or even further to the next beading. By daylight this is all very well. I was now moving between two shadowy forms, that of Couttet vaguely blocked out against an indigo glacier directly below, that of Bozon on an equally indigo but spangled sky. Bozon proved the less shadowy, as I could not always prevent his standing on my head or trampling my already-tortured fingers. On the black rock it was a game of hide and seek with the holds, treacherous ones at that. And although we kept in close formation, the fear of dislodging a large rock upon my companion below was a constant source of worry to me.

By rare judgment and guiding, Alfred Couttet brought us down below the great *rimaye*. Once on the snow, pale starlight helped us around the larger crevasses and over several snow-bridges. We skated down two steep snow slopes on the *corde de rappel* with safety and dispatch. After that we made good progress. Our descent from the Col had been tedious if not monotonous; with a good moon our speed would have been much better.

At 1.30 A.M., September 1st, three weary climbers returned to the hospitable Refuge de Leschaux. Four and a half hours later they were trotting down the Mer de Glace toward Montenvers and Chamonix. The first complete traverse without bivouac of the Grandes Jorasses had been accomplished in 22.20 hours, with stops. Alfred Couttet thinks it should be done in 18 hours. Our climbing conditions were pretty bad.

As a matter of interest it might be well to recall the first great ascents of the mountain. Thus, on June 24th, 1865, the western summit of the Grandes Jorasses was attained by Edward Whymper

with the guides Michel Croz, Christian Almer and Franz Biner. At the summit they met with a violent storm. Two days later some guides from Courmayeur, Henri Grati, Julien Grange, Joseph-Marie Perrod, Alexis Clusaz and Daniel Gex followed the first party's traces to the summit.[3] One June 30th, 1868, "Mr. Horace Walker, with Melchoir Anderegg and Johann Jaun, of Meyringen, as guides, and Julien Grange, of Courmayeur, as porter, ascended the highest peak of the Grandes Jorasses."[4] Innumerable other climbers followed. Of the two expeditions mentioned, both ascents and descents were made from the Courmayeur side. It was likewise from the Italian side that Mr. Geoffrey Winthrop Young and Mr. H. O. Jones, with Joseph Knubel and Laurent Croux, accomplished the first descent of the northeast ridge, the 11th of August, 1911. Three days later, without Croux, they made the first ascent of the west ridge, scaling but not traversing over the Punta Margherita. Mr. Young writes of the Margherita: "To try the ridge would be waste of time."[5]

For this trip, good weather and climbing conditions are essential. An early start is advisable; but climbers would do well to wait for the sun before beginning the rock-work since about twice as much energy is consumed upon icy or even cold rock as on warm. This fact is not always taken into account even by seasoned climbers. Again, mid-summer is the best season for this trip both on account of the length of time required and on account of the altitude of the peaks to be crossed. In the old days it was necessary sometimes to bivouac because of scarcity of cabins and refuges. This, in my opinion, should no longer be attempted, as few people are able to stand the rigors of a night at high altitudes unless highly specialized equipment is used.

The new cabin of Leschaux is an ideal one for climbers. Unusually comfortable and well-appointed, it greatly facilitated this particular traversing of the Grandes Jorasses. In closing, the writer cannot resist the desire to express her appreciation of the great work of those who blazed the way before her.

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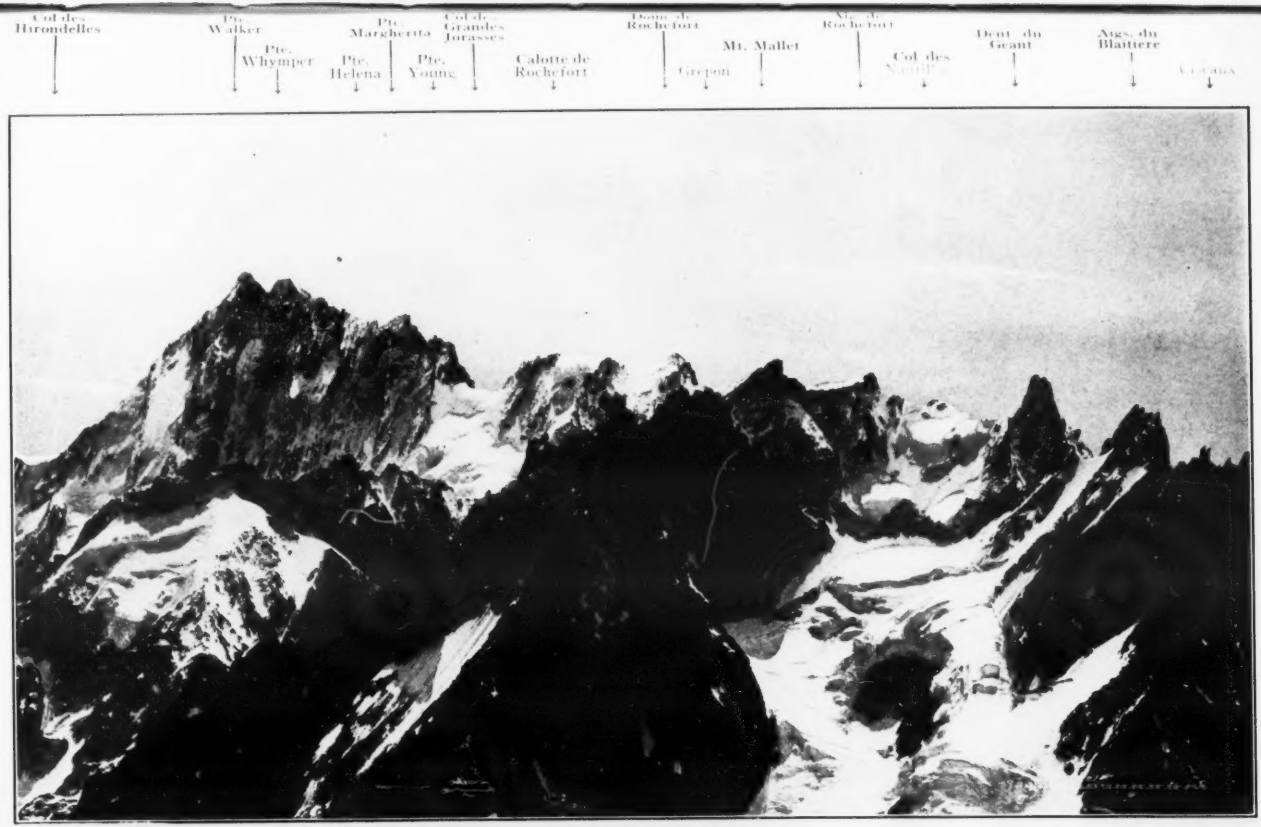
[3] *Scrambles*, 2nd Edition, pp. 344-5.
[4] *A. J.*, Vol. IV, p. 157.
[5] "On High Hills," p. 267. See also *A. J.*, xxv, p. 163-4; xxxvi, p. 393-4.



Cliché Aëro-Photo.

GRANDES JORASSES LOOKING SOUTHEASTERLY

Psychological Aspects of Mountaineering

J. W. A. Hickson

IT would indeed be a very confident and naive person who believed that, at this stage in the history of mountaineering, anything new could be said concerning the reasons which lead, or even impel, human beings to climb. In a recent notable book by an accomplished mountaineer, it is stated that no convincing reasons can be given.[1] On the other hand, mainly outside the circle of climbers, although apparently occasionally supported by those within it, there is the prevailing view, that it is danger, as such, which chiefly attracts the mountaineer, who thus embodies a form of incipient madness. Dissenting from both these views, the writer considers that it may be worth while to raise a few points concerning the more subjective aspects of mountaineering, for discussion.

It is a striking fact that few English mountaineers who are writers have stressed the attraction of the intimacy one feels with nature, on the way up the heights. Very scarce are those who admit that they climb for the views; the writer has heard only two mountaineers admit that they underwent the exertions solely to enjoy the incomparable sights, an attitude to which he himself would not subscribe; although he feels that if this factor were eliminated, mountaineering would be shorn of one of its greatest delights. One can today, of course, supplement the panorama of the mountain territories and assist one's knowledge of the relative positions of peaks, glaciers, valleys and rivers, by looking at these from the air. For a surveyor of the mountains such views are immensely helpful; but they can never take the place of the closeness and zest of the experiences gained by scrambling up the peaks themselves, or by lying on a snow-field on a lovely day. When one is on the summit of the highest peak of a district, the view is not always the finest; for from such a point, the lower peaks, even if fairly high, appear to be diminished and flattened out; their relative proportions and outlines become quite changed or obliterated. It can hardly be because they are lower and we look down on them, that they cease to be objects of desire, as has been suggested by a recent writer.[2] One may,

[1] Climbs and Ski-Runs, by F. S. Smythe, chap. 16.

[2] M. M. Strumia in a stimulating article in the *A. A. J.*, I, pp. 31-39.

indeed, feel more exhilarated and uplifted when on the top of Mt. Blanc than on the Jungfrau, but does the Petit Dru, if not previously climbed, therefore cease to be an object of attainment?

An individual may love climbing and be indifferent to scenery. Mere collectors of peaks and exponents of acrobatic alpinism, whose virtuosity some of us envy, may remain without any appreciation of beauty. Others may love the scenery and care less for climbing as such. Because, however, an individual cultivates the muscular side of his nature and develops his mountaineering skill, this need not impair his capacity for aesthetic pleasures.[3] For the most part, the circumstances of the sport tend to make the mountaineer more responsive than other men to natural beauty. Those who are most attracted by the mountains and constantly return to them, are those who can enjoy the fun and frolic of a sport with the aesthetic delight which is produced by the marvelous forms of the great ranges with their many colored rocks and their glistening glaciers. Such visual delights constitute an integral element in the total complex of factors, which induce the mountaineer to explore and ascend. This factor of aesthetic enjoyment is the unique and elevating aspect in mountaineering. It does not enter, either in the same way, or to the same degree, into any other sport. One must be a lover of nature and feel an intimate contact with nature in order to derive the fullest enjoyment, both immediately and retrospectively, from the hours spent on the heights.

A strange thesis has been maintained by a writer already referred to, namely, that in order to admire the scenery on mountaineering expeditions, one must be relatively fatigued, because it is only when our sportive mood is exhausted, that we can contemplate. "If we are completely without sense of muscular labor, we will be restless and less appreciative of the outer world."[4] Yet he admits that "fatigue is not essential to contemplation or meditation." On the contrary, we should be inclined to say that it impairs the keenness of both perception and contemplation. "If we could be brought," writes Dr. Strumia, "to the summit of a peak without fatigue, the sensations would be entirely different than on viewing the subject

[3] "We fancy at such times that we are creating a masterpiece of beauty, and we certainly draw nearer to that abstract goal that was aimed at by those who partook in the classical games when they derived a pure artistic enjoyment from muscular exercises."—*Guido Rey.*

[4] *A. A. J.*, Vol. I, p. 37.

after a climb."[6] Undoubtedly; and whereas, in the latter event, there might, and probably would be, a fuller satisfaction, "a more heroic tone," as Dr. Strumia puts it, yet, in the former event, the appreciation of the scenery would probably be more intense and discerning. Fatigue, as Dr. Strumia is aware, lowers psychological activity and discrimination. It is in the early morning hours (although, perhaps not in the earliest when one is scarcely awake) when one's organism is still in a fresh and energising condition, when one appears to cover the ground without any effort, that one's aesthetic enjoyment of the external world is deepest; or again on easier climbs, where one does not have to hang on his fingers and there is an opportunity to look and to contemplate. It is then that the impressive immensity of the starry heavens, the wonderful reds, purples, orange and saffron colors of the sunrise, the beryl blue and deep sea-green of the crevasses, the enchanting curves of the wind-driven snow, the outlines of the magnificent precipices stretching away into unmeasured spaces, make the strongest sensational appeal.

In order to enjoy the beauty of the higher peaks, the mind must be thoroughly self-controlled and self-possessed. With fatigue, the scenery may take on a depressing tinge. If one is anxious, a mountaineering expedition may pass from a joy to a nightmare; even the sparkle of the snow may appear to be a cruel glitter. If his equanimity be disturbed, the climber will not see beauty, but a harsh and hostile aspect of the universe. Climbers in the Himalayas have declared that the peaks look cruel and fail to supply the aesthetic enjoyment provided by the Alps.

On a difficult, technically interesting and exhaustive climb, one may not pay much, if any, attention to the scenery. Strivings to overcome unusual obstacles and avoid dangers, may obliterate nearly everything but the realities of the actual climbing, and many of the details of the latter would probably be forgotten, were it not for the camera which occasionally reveals something new and affords us the pleasure of living over again later the emotions of the day. After giving our bodies an initial impulse, we continue to act as if under the influence of suggestion, and overcome difficulties which might appal us were we fully alive to them.

[6] Ibid., p. 38. Perhaps the writer has not sufficiently distinguished between the feelings connected with the actual experiences and those arising from retrospective contemplation. Possibly also a doubtful metaphysical viewpoint has not been without influence.

A psychological cause of greater endurance in mountaineering than in ordinary exercise is the mental distraction which excludes boredom. Several hours walking on a dull road, or trudging over monotonous moraines, may suggest feelings of fatigue before the muscles are actually tired. The variety of movement, and the change of scene in mountaineering, combined with the excitement of an ascent, may postpone the sensation of exhaustion for many hours. Sometimes, too, we may not experience the expected fatigue, because feelings of exhaustion have been submerged in intenser feelings of satisfaction produced by our achievement. What causes, or wherein lies the essence of such satisfaction?

There appears to be a general agreement that a high peak like Everest or Aconcagua, or a both difficult and high one like Kangchenjunga, or a rock peak like the Grépon, or south face of the Marmolata, presents a challenge by inanimate nature to the physical and mental powers of man. We wish to show that, in a struggle with the unsympathetic forces of nature, skill and intelligence, supported by prowess and courage, can successfully compete and carry the day. It is a case of a bloodless fight against impersonal forces, in which there is involved, neither the defeat of other human beings, nor suffering to the lower orders of animal existence. This is an aspect of a non-competitive and sophisticated sport which is also elevating, since in its successful pursuit, there need be no regret over the shedding of blood or the disappointment of rivals.

How exhilarating to be the first to stand on a summit after stressful climbing, which has demanded thought and experience to pick out the route and skillful adjustments of movement to surmount the difficulties! An equally high and oft-trodden summit, which you can reach with your hands in your pocket, will never produce the same sort or degree of satisfaction, although the view from it may be equally fine, or even finer. It does not call forth all the latent powers of man, who derives the keenest satisfaction from exploiting to the utmost the resources of the human body, and the cognitive and conative forces of his mind. "A severe rock climb, partly because it is a supreme test of the physical and mental qualities, is its own reward," declares Arnold Lunn.

But difficulty is often, in the minds of the uninitiated, confounded with danger, which, as such, does not appeal to the genuine mountaineer, although it may to the oromaniac. The sense of pleasurable excitement which an expert cragsman experiences on

an exposed traverse or in a difficult crack, or on a thousand feet of perpendicular rock wall, is not due to an impression of danger, but to a sense of security; the contrast between what is and what might happen enhances the dramatic factor in the sport. But "the contrast between the thing one is, and the thing one might so easily become, seems the most absurd of paradoxes to those secure in the confidence founded on trusted handholds and sound rock," and, one may add, knowledge of themselves. The leader may, of course, have exhausted the margin of safety, may have over-estimated his powers, and, in consequence, being over-strained, may be irritable and liable to slip. To escape from a perilous situation, affords a most satisfactory sensation of relief. But, in general, the good amateur, like the good professional mountaineer, does not take illegitimate risks as such. What he aims at, and finds satisfaction in achieving, is bringing risks of this kind under the class of pleasurable and reasonable exercises and reducing otherwise unwarranted dangers to a minimum through the application of experience, skill and intelligence (which is involved in the first two).[8] An expert, even on the Mer de Glace side of the Grépon, is, as Arnold Lunn has rightly said, safer than a nervous woman trying to cross Piccadilly.

That the mountaineer has not a perverse liking for danger may appear to be questionable when one remembers the utterance of an illustrious climber like A. F. Mummery, who, while recognizing that the great ridges sometimes demanded their sacrifice, wrote: "But the mountaineer would hardly forego his worship, though he knew himself to be the destined victim." I think that if anyone knew, i. e., realized with certainty, that he would not return from a climb, he would be very foolish to attempt it, unless he had strong reasons for ending his life in a spectacular or sensational manner. It is quite intelligible that Empedocles may have thrown himself into the crater of Aetna, and yet been quite sane. Those to whom mountaineering is a religion as well as a sport, will not hesitate to take risks, as genuine and enthusiastic adherents of all religions have done and will always do; and if they be unusually expert

[8] There seem to be three sources of danger which intelligence cannot altogether eliminate, although it can greatly reduce them: falling stones, ice-avalanches and the rarer one of sudden and unforeseeable changes of weather. Whether dangerous and concealed crevasses can always be detected is a disputed point among the craftsmen. In "The Kangchenjunga Adventure," F. S. Smythe calls attention to exceptional forms of danger which encompass the Himalayan climber; p. 228.

and daring, they will not realize the risks to the same degree as will those who are less skilled and less adventurous. In moments of exaltation it is possible to write in retrospect like Mummery, feeling confident that one can pull through the greatest dangers. Over-confidence in one's own powers as against the unsympathetic forces of nature has, however, been the undoing of some of the greatest mountaineers. Mummery's disappearance in the Himalayas serves to remind us that

> Sie halten die Herrschaft in ewigen Haenden
> Und koennen sie brauchen wie's ihnen gefaellt.[7]

At the root of mountaineering is the love of exploration, of doing, seeing, finding out something new. The unexplored places of the earth arouse the curiosity of human beings, whose intelligence prevents them from lying down complacently like the beasts of the field. This is why a virgin peak, if unusually high or difficult, is especially attractive in that it is a fresh challenge to human powers. Mountaineering is a concentrated form of exploration, in which the tedium of delay is cut out and the dramatic intensity thereby heightened.[8] A big and long climb of a distant peak resembles a miniature campaign. And one of its incidental attractions is the opportunity for detailed planning, which becomes more exciting as the time approaches to put the plan into operation.

A difficult virgin peak involves a succession of problems to be solved on the spot. Those who have climbed can best realize how broken up and intricate a mountain face can be, and how pleasant are the sensations connected with overcoming it. They are akin to those accompanying the solution of a mathematical or any intellectual difficulty. And these difficulties may be equalled by those presented by ice or snow. A broken-up glacier, snow slope or ice-wall presents a maze of séracs and crevasses which may involve greater risks, if not greater difficulties, than any rock climb. After a peak has been climbed many times, new routes on it have to be tried, in order to keep up the interest in, and significance of, the

[7] "There is nothing friendly about a Himalayan peak," says Mr. F. S. Smythe. "You feel that it is coldly hostile, that it resents intrusion. It will kill you, if it can. And so, if you climb it, you climb it only for the sake of achievement. When you have reached its summit, you have finished with it. There is no desire to renew acquaintance or make a friend of it." In bad weather on any high peak, the indifference of nature to human life is borne in on the dullest mind.

[8] Hardly true of Himalayan climbing.

game: just as in other sports new hazards and new instruments have to be conceived. This is why in Europe, today, it is not so much the instinct to explore as the desire to devise new and hard routes, that impels the expert mountaineer. The standards of mountaineering have been continually rising because the sport has become more intellectualized and sophisticated. A climb that calls forth all the special physical and mental capacities of his organism, as well as his experience, is the one that now especially attracts the well-trained European mountaineer; and an experienced cragsman is safer on a difficult than on an easy climb just because he will remain more alert. It is on the easy places when attention relaxes and one is off one's guard, that accidents are more likely to happen.* After a hard struggle up the rocks, even the oldest and most cunning climbers on the descent have to guard against the feeling that all the difficulties are over and care is no longer essential. Even relatively to the number of climbers, there have been fewer accidents on the Grépon than on the Jungfrau or Wetterhorn, which shows that difficulty and danger are not synonymous. The dramatic, although for the most part illusory, impression of danger on such an ascent and descent as the Grépon, enhances both the thrill and pleasure of the climb. Is it not most satisfactory and exciting to feel that one's forearms can still be relied on for one's own life, and perhaps for the lives of the party? And in what other kind of sport is a human being brought into more untrammelled and delightful relationships with so high a class of companions?

A well-trained and easy-running mechanism of nerves and muscles yields a peculiar exhilaration in ascending a vertical rock-wall. In mountaineering, as in other sports, some of the fascination results from the exercise of a successful technique. The effect permeates one's organism and is reflected in a consciousness of more vigorous individuality. It realizes the philosophic doctrine that the more we act and the less we are acted upon, the freer we are. It may produce an illusory feeling of a mastery of existence.

On a perfect day, when the stillness of the upper regions is unbroken, except occasionally by shouts and laughter of merry companions, when the sense of being out of the world and of looking down upon its kingdoms is uppermost, when one sinks into the glory and profusion of nature and one feels existence in a many-sided sensa-

*The few fatalities which have occurred in the Canadian Rockies have with one possible exception taken place either on easy peaks or at easy places.

tion, then, in the exaltation of the moment, one may be led to believe that he has grasped the world in a single act of intuition; ***uno intuito sub quadam specie aeternitatis.***[10] But when our scientific spirit is uppermost we realize that the hills are not eternal and that the core of existence may be impenetrable by our minds.

In the last chapter, entitled "The Philosophy of a Mountaineer," of a book by one of the leading contemporary mountain scribes and climbers, the author confesses himself unable to give an adequate reason for his predelictions and love of the hills. To the question: "Why do you climb?" Mr. F. S. Smythe replies, "The mountaineer has no answer." The love of the hills, he declares, is indefinable. Now, the love of mountaineering is indefinable only in the same sense as it is difficult to convince a sufferer from sea-sickness of the delights of sailing, or to explain the love of the prairies to one who prefers the heights. People who do not possess steady heads, or who prefer the soft things and flesh-pots, will never understand the attractions of mountaineering; while those who hold their individual lives extremely precious, ought to take serious thought before indulging in any sport that is worth while.

Mr. Smythe backs up his pronouncement by another doubtful statement, that the best things in the world cannot adequately be expressed in speech or print: they are part of the soul. What is termed the soul is only known through certain manifestations, and psychologists nowadays are not disposed to admit the existence of any mystical entity to which problems can be conveniently referred and thereby shelved. Mr. Smythe emphasizes the discomfort, the doubt, the anxiety and weariness, the poor food, scanty ablutions, "clothes odorously reminiscent of sardines and rancid butter," the decline in the general appearance of the mountaineer, and declares, that he cannot possibly explain why he goes back to the mountains, season after season. The foregoing pages embody an attempt to suggest the main reasons for such conduct.

To the exhilaration which one anticipates and enjoys from exercise in that "higher purer air," where one is "unapproachable by worry and oblivious quite of care," to the freedom of living, absence of conventionality, escape from a monotonous round of social duties, have to be added the attraction of adventure and the ever buoyant hope of success against the opposing forces of nature. We go to the hills "for fresh draughts of simplicity and beauty," which

[10] Spinoza: Ethic, Part II. 44.

we need more and more, under the present-day conditions of life in large centers of population. The discomfort, the hard beds, the temporary decline in one's social appearance count as nothing against the factors which make for a freshening and strengthening of the cragsman's nerves and morale.

It is also not to be overlooked that in retrospect less pleasant experiences, unless they are of an unusually intense or terrifying character, become dimmer, while more pleasant experiences persist with greater vividness in memory. For this selective tendency of the human mind, there is probably a physiological cause, which we shall not inquire into here. The author against whom we are arguing recognizes the psychological fact, and at the same time supplies, unwittingly(?) a partial answer to the alleged unanswerable question by writing: "To remember well is to have lived well. Mountaineering stores a fund of memory that will endure through a man's lifetime. Seen through the mists of time, its harsher features are smoothed away. We still see the struggle with the *tourmente* on the ice-glazed slabs, we hear the furious howl of the wind and smell the dark mist wreaths. But we do not feel the pain of numbed fingers, the ache of cheeks slashed by the hail, the weariness that assails the joints. We remember, too, the vistas that have delighted our gaze, the host of peaks raising their silver shields to heaven." [11] In this and other passages of his brilliant book, his rapturous eloquence has supplied some of the reasons which impelled him to the adventure of Kangchenjunga.

[11] This and the foregoing quotations are from "Climbs and Ski-Runs," chap. 16.

Frequented and Unfrequented Ways in the Selkirks and Rockies

Noel E. Odell

IT is well known to many that the western slopes of the Selkirk range and of its outlying western foothills are, owing to copious precipitation, covered with some of the densest forests and undergrowth to be found anywhere on the American continent; that as one passes westward from the higher eastern ranges, the timber-line rises nearer and nearer to the tops of the lowering mountains, until on the western border of the Gold (Columbia) range there are few summits unmasked by forest. Not until the dryer Interior Plateau region is reached, further westward, do we find again a diminution of the forests and smaller vegetation.

In June last I found myself at Revelstoke in British Columbia, about to embark upon a geological investigation, under the auspices of Harvard University, that was destined to carry me far through the wilds of some of the less known parts of this country. A considerable part of the investigation, whose purpose was the examination of regional rock structures and their conditions of metamorphosis, took me into the all too heavily forested region west of Revelstoke, and even in the vicinity of the latter the almost tropical covering of the lower ground proved a serious handicap. Here, however, the mountains rise appreciably above timber line, and in many places above the permanent snow-line itself.

Mount Revelstoke Park possesses in the Clachnacudain range much wild glacierized country and some goodly summits that have scarcely, if ever, been visited, rising in some cases to close on 9,000 feet, while further to the north lies Mt. Moloch (10,208 ft.) and other comparable summits of the Big Bend. Time did not permit of our going far into this range, but a sporting little peak known as Pt. 7,983 ft., or Clachnacudain, West, (Wheeler), gave R. M. B. Roome and the writer an interestingly varied rock and snow climb by its southwestern side. Much bigger propositions lay to the north-eastward, but from our summit commanding views were to be obtained of the Selkirk range, and of such prominent outliers of it as the Albert Peaks, of most striking outline.

South-southwest of Revelstoke in the Gold (Columbia) range, along its eastern border, are several bold peaks exceeding 9,000 ft.,

but perhaps most challenging of all is Mt. Begbie, whose triple summit reaches 8,962 ft. A fourth ascent, by what is believed to be a new route over the northwestern arête, and a descent to the glacier via the eastern ridge, gave Roome and the writer a first-rate though not difficult expedition.

Other ascents in the range were those of Joss Mt. (7,900 ft.) and of Eagle Mt. (7,700 ft.), the latter affording a fine rock climb of some 1,000 ft. on the northeast face with a finish over the towers of the east ridge.

Selkirks

At the end of August, wishing to learn something of the nature of the main range of the Selkirks, the writer proceeded to Glacier, where the summer camp of the Harvard Mountaineering Club was situated. Moreover it was to be the long deferred fulfillment of a burning desire to see something of this, perhaps the finest, of the great ranges of the West. It had always seemed from the classic writings of the Rev. W. S. Green and Howard Palmer, in their well-known books on this range, that so much could be found in beauty of form, in extensive glacier setting, and in a more desirable and reliable structure for climbing, as to place the Selkirk mountains in a category more akin to the Alps than the Rockies. And the passage through in June on the C. P. R. express, when everything was immersed in cloud and gloom, gave the greater zest to the venture now.

Accompanying the writer to the camp was C. G. Crawford, of the second Mount Everest Expedition, now on a visit from England to the Rockies. The club party of nine had already been in operation for two weeks. The day following our arrival, Crawford and I led two ropes of three each across the Illecillewaet Névé to Glacier Circle and in our waywardness we must confess to having paid but little attention to the high "caravan doctrine," expounded so strenuously by the ex-president of that group, when putting our own individual party routes across that exposed tract of country!

However, next day (Aug. 27) the two ropes in orthodox concerted fashion attacked Mt. Fox by the long east ridge, which rises from the depths of Glacier Circle, and after nine hours of fairly leisurely, and never really difficult climbing, reached the summit.

The fine situation of the latter, the commanding view of the Illecillewaet Névé with Sir Donald beyond, and the great wall of the Dawson range so near at hand, make this a most excellent expedition and worthy viewpoint. The descent by the southwest face to the head of the Dawson glacier and return thence down the Fox glacier nearly cost the party a night out, owing to the complexities of the lower part of the latter glacier having to be tackled in the gathering darkness.

The following morning only A. B. Emmons and J. H. Kennard were eager to start out as late as 11.20 with the writer for Mt. Topham, from which to get a glimpse of the remoter beauties of the Purity range and the great Deville Névé, and if possible a short climb only. In little more than five hours we reached the top, by way of a sporting rock wall bounding the Deville glacier icefall on its eastern side, and the western slopes of the mountain. Three hours sufficed for our return to the Circle by the same route. It would be hard to find anywhere a more exquisite and impressive panorama than that from Mt. Topham. And what was so remarkable during the greater part of last summer was the prevailing clarity of atmosphere and absence of smoke, which in spite of the dry conditions in most parts of the mountains can probably only be attributed to the lack of severe electric storms that usually prove such a potent cause of forest fires. Another outstanding blessing last summer in British Columbia was the absence of mosquitoes and other flies from even the most notorious localities in the valleys and the lower country.

If it had not been for the club program, as well as the lack of adequate provisions, some of us would have dearly loved to linger longer at Glacier Circle and its well equipped cabin, for there can be few, if any, rivals of it as regards excellence of position and charm of surroundings, and with numerous scarcely-visited mountains and glaciers to explore.

On August 31st in a bitterly cold wind and some snow the writer led J. H. Kennard and J. C. Gray up the northwest ridge of Mt. Sir Donald, Crawford following with A. Carscallen and A. B. Emmons. The frigid conditions made halts inadvisable, and we reached the summit in 3 hrs., 55 mins., from the Sir Donald-Uto col, the second party arriving within 40 minutes. Leaving the summit at 11.40 we descended by the ordinary route to the Vaux glacier and were back at Glacier at 3.55, following a good

deal of delay with blueberry-gathering in the woods, as an addition to our supper menu.

The Harvard Camp having terminated, Crawford and I resorted to excellent quarters at the house of Mr. Hartley, the Forest Warden at Glacier, where we were joined by Lady Rosemary Baring. We had heard that the east and south faces of Mt. Tupper had never been climbed and resolved to have a look at them. Starting on September 3rd from the Hermit Hut,[1] the three of us attained Tupper Crest, and then traversed below the south face of Mt. Tupper's highest summit to the arête that runs steeply down from the latter in a south-southeasterly direction. The face and the arête appearing extremely steep and unviting we reconnoîtered round into the gap separating the Camels' ridge from the eastern ridge of Mt. Tupper. The prospects of reaching the summit of Tupper from this direction seemed somewhat doubtful, and opinions differed amongst the male element in the party as to whether we should proceed or retreat, until the casting vote of the lady member committed us to the attack. Crawford led off from the gap and making light of the steep lower rocks, put us well on our way upward before he decided he was having all the fun and handed over the lead to me. The upper part proved surprisingly straightforward, and even capable of variation in many places, and at three o'clock—1 hr., 30 min. only from the gap—we found ourselves on the summit rocks and feasting upon the beauties of the Hermit range and of Sir Donald, as well as on the remnants of our provisions. A quick descent by the ordinary route brought us back to Hermit Hut so pleased with life, that it was not till another night had been spent in its pleasant precincts (though not too cleanly interior), that we made our way back to Glacier.

The writer was anxious to see something of the east side of the Sir Donald range and its structure, and moreover it appeared that no route had ever been made up Mt. Sir Donald from that direction. Accordingly the same party of three crossed the Sir Donald-Uto col at 6.30 A.M. on September 5th and made their way unimpeded down the Uto glacier for a distance of about one and a quarter miles. The cliffs of Mt. Sir Donald on the north and northeast drop so abruptly to the glacier that for a long time we despaired of effecting a lodgment on them. However, when

[1] The hut is placed at the 6,750 ft. contour on Wheeler's 1:60,000 map (1906): this seems to be 6-700 ft. too high.

we had descended to an altitude of about 7,230 ft. by aneroid, this was eventually accomplished, and the ascent of a steep wall of three hundred feet brought us on to the great glacierized shelf of the east side of Sir Donald, which provides the southern affluent of the lower Uto ice stream.[2]

Neglecting the more difficult looking ascent to the upper north-east arête of the mountain rising abruptly above us, we decided to make for what appeared from this aspect to be the main ridge of the mountain. Two hours of step-cutting, varied with easy rock work, brought us at 8,700 ft. to what turned out to be not so much an eastern ridge, as the broken edge of a great structural slab of the mountain. Thence followed about 1,200 ft. of crag, buttress, and slope of a monotonous and very unstable character, until we found ourselves at an altitude of 9,900 ft. on the east-southeast ridge of the mountain. Unexpected difficulties on the latter, necessitating at one place a complicated roping-off operation from a pinnacle into a gap in the ridge, delayed our arrival at the summit until 5 o'clock. And can there be another summit in all the Selkirks, where the enthralling panorama will more likely compel protracted delay? The ascent from the Uto glacier had taken 8 hrs., 45 mins., and at such a late hour of the day we had, of course, to forego our intention to descend by the northwest ridge. And even so, going down the ordinary route, we found ourselves at dusk (7 P.M.) at the bergschrund of the Vaux glacier and resorting once more to an *abseil*, in this case from an ice-pinnacle, to negotiate the abrupt declivity of the wasted and expanded *randkluft*. This, however, was not the last of our troubles, for since our descent of the glacier but six days previously, many snow bridges had disappeared, and the passage across several large crevasses in the gathering darkness proved a matter of no little difficulty. It was a somewhat fortunate and not unthankful party that eventually reached the comfort of the Hartleys' chalet at Glacier at 11.25 that night.

Rockies

The same party of three shortly after this returned to the Rockies and made the ascent of Mt. Louis, and then of Mt. Victoria by the ordinary route from Abbot pass.

[2] The features of this face can be well seen in a photograph opposite p. 411 of Howard Palmer's "Mountaineering and Exploration in the Selkirks."

Photo. Wheeler Survey

SIR DONALD FROM THE NORTH EAST ACROSS BEAVER VALLEY
Showing route of Odell-Crawford-Baring Party.

In August the writer had paid a flying visit to the Alpine Club of Canada's camp at Maligne Lake during the last few days of its existence. No words can do justice to the grandeur and quality of scenery of this lake, at the southern end in particular, and no greater praise perhaps could be conferred upon it than that by a Swiss friend of the writer's who was ready to admit that Maligne rivaled any lake in his own country! Privileged, indeed, are those who have beheld it, and who were able in addition to experience the hospitality of the A. C. C. there this last summer. The climbing accomplishments from the camp will have been recorded elsewhere.[8]

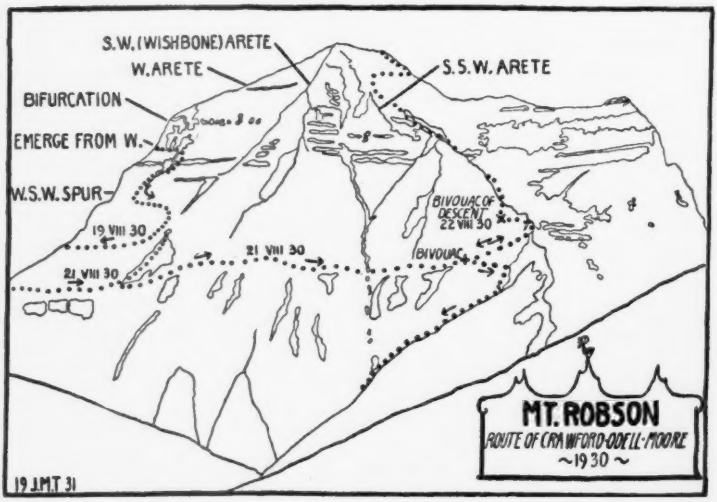
Owing to the exigencies of time, it fell to my lot to make but few ascents in this neighborhood. The traverse of Mts. Brazeau, Valad, and Henry McLeod, with a party of six occupied one day. Another interesting expedition was the first ascent of an unnamed peak northeast of Mt. Julien and overlooking the southern end of Maligne Lake, having an altitude by aneroid of 8,800 ft. This excellent little rock climb was accomplished by the east ridge and descended by the easy west face, in company with Miss Kate Gardiner and C. G. Crawford. In view of his original reconnaissance of it, no better name was forthcoming than "Crawford's Pip." The confirmation of this by the Geographic Board of Canada is eagerly awaited!

Terris Moore, having returned unexpectedly early from his successful first ascent of Mt. Bona in Alaska, had asked me to join him in an attempt on Mt. Robson, and being particularly anxious to see something of that country I readily acceded, and brought along Crawford, too. On our way in to Robson Chalet at Berg Lake we met Miss Helen Buck and Dr. A. J. Gilmour and learned from them and from the two Fuhrers (guides) accompanying them, further details as to the latter's search for N. D. Waffl, who had not returned from a solitary attempt on the western face of the mountain on August 4th. Full details are given elsewhere in this journal as to that sad loss, the various attempts to recover effects and the probable nature of the catastrophe.

From a high bivouac at about 8,100 ft. on the talus slopes below the great upper cliffs on the western facet, on August 19th, we made an attempt on the mountain. Our route lay up the wall of a notable couloir that seams the western facet in its northern half,

[8] See *Canadian Alpine Journal*, 1931.

and the considerable difficulties of this ascent, occasioned largely by verglas, forced us to the right and eventually out on to the crest of the west-southwest spur that supports the main western arête of the mountain. It may be mentioned that the western facet is the truncated end of the western arête that rises prominently above Emperor Falls and is a feature that has been somewhat unnecessarily referred to locally as the "Little Wishbone arête": whereas the original and plausibly named "Wishbone arête" is well seen from the valley of the Grand Forks. The unexpected difficulties of the facet, and the general conditions of verglas on the mountain, caused



us at about 10,800 ft. to abandon the attempt and to make instead, in the time left at our disposal, a search for any effects of Waffl that it seemed likely might be found further across on the open reaches of the western face. We were, however, unsuccessful in this and in the end had considerable difficulty in descending the skirting cliffs of the face, having to rope off at one place. This was quite close to the glacier avalanche fan, where the Fuhrers and Joe Saladana and Hargreaves had during the last few days found certain articles of Waffl's clothing and equipment.

Two days later a search was made in company with Miss Buck and Dr. Gilmour of this same avalanche fan. Its crevasses and

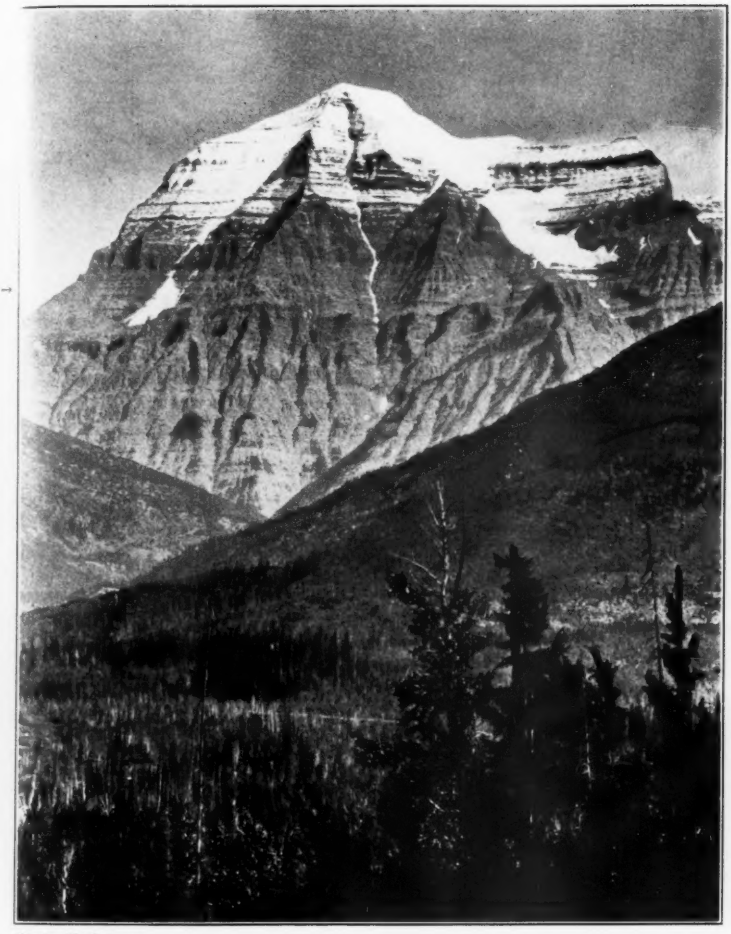


Photo. H. Palmer

MT. ROBSON, 12,972 FT., FROM THE SOUTH WEST

The fatality of 1930 occurred somewhere on the face above the ice patch indicated by the marginal arrows.

randkluft were examined. Crawford, Moore and I then traversed round, at about the 8,000 ft. contour, to the south side of the mountain and from a bivouac at about the same altitude were successful, on the 22nd, in reaching the summit of the mountain. The lower glacier gave quite straightforward going on crampons, and few steps had to be cut until we had surmounted the rock-glacis that at about 10,900 ft. supports the great upper ice-fall wall. From there onwards the rotten ice surface, on which one's crampons gave insufficient security, necessitated long stretches of cutting. Arrived at the terrace, about 11,900 ft., that forms a break in the vast ice cataract of the southern side of Mt. Robson, we traversed eastward beneath the great ice wall which supports the summit crest. The direct ascent of this feature at its south-southwest edge appeared feasible, though lengthy, owing to the numerous ice bulges and pitches, and was apparently the route adopted by W. B. Putnam and J. Hargreaves in their ascent in 1922.[4] We hoped, however, for a better alternative at the southeast edge of the ice that overlooks the Robson glacier, and which had been utilized in the first ascent of 1913 and in 1924. Our hopes were not fulfilled, for above some initial schrunds we found at intervals steep ice pitches and long stretches of ice slope veneered with the rottenest texture of ice crust, into which each step had to be deeply cut, and Crawford and I were only too glad to relieve one another fairly frequently in leading. At 2.30 we had polished off this 1,000-ft. culminating feature of the mountain, and our arrival on the delicate and corniced summit ridge synchronized with a partial clearing of the banks of swirling mist, which afforded, by glimpses of the remoter surroundings, an impressive realization of Robson's towering supremacy.

The greater part of our staircase had to be recut on the descent, and though no time was lost, we only succeeded in reaching the lower ice-fall (9,000 ft.) by about 10 o'clock, where struggles with crevasses in the dark and the eventual negotiations of a steep rock wall, brought us to a halt on a platform with sufficient space for a night's bivouac. This platform was just below, but fortunately adequately protected from, the calving wall of the (lower) ice-fall, beneath whose tottering cliff we had passed at top speed in the morning. Now in the darkness we scarcely wished to repeat the

[4] See *C. A. J.*, Vol. xiii, p. 39, 1923; and *Sierra Club Bulletin*, February, 1929.

experience at a slow crawl. As we eked out the long cold night on our ledge, it was trying to realize that our earlier bivouac was but 700 ft. below us, and at the first streak of dawn we lost no time in running the gauntlet of the ice cliff over its disgorged wreckage of ice blocks, and in descending to our gite for a hot breakfast and a sleep in the morning sun. It was not till 4 P.M. that day that we had unravelled the intricacies of the descent and arrived at Kinney Lake, to be welcomed by Miss Buck and Dr. Gilmour and escorted to the Hargreaves' ranch.

Mt. Robson is technically quite the hardest ice ascent the writer has made in the Rockies or Selkirks, and in his opinion it can be classified with the big ice climbs of the Alps as far as its southern route, as above described, is concerned. Unlike many of those climbs it possesses definite hazards that appear to be unavoidable under the present conditions of glacierization:[5] chief amongst these are the upper and the lower ice-fall walls below which, and within deadly range of which, in each case a passage must be made. It is believed that the danger of the lower ice-fall wall might be circumvented by a route, involving greater difficulty, entirely up the rocks that bound the glacier on the west. The latter possibility would also avoid a potential risk of avalanches down the channel of the lower glacier from the upper ice-fall. But the hazard of the upper ice-fall wall remains, and must remain, until a radical change in ice conditions takes place and on such a steep face only a very pronounced waning of existing glacierization will ever effect this.

The statement in the "Climber's Guide"[6] that a sound route on Mt. Robson has yet to be found still holds good. It may, as there surmised, lie up the "Wishbone arête" of the western face, but as yet no satisfactory way of reaching that arête has been found.

[5] See *Alpine Journal*, Vol. xxxvi, p. 420: "A Climber's Guide to the Rocky Mountains of Canada," p. 213. The route could not, however, be said to be easy this year.

[6] *Loc. cit.*: p. 213.

Photo. V. Sella *Courtesy App. Mt. Club*

USHBA FROM SOUTH WEST SHOWING APPROXIMATE ROUTE OF PFANN TRAVERSE

Ushba, One More Attempt

LAWRENCE COOLIDGE

USHBA (15,409 ft.), double-barreled Matterhorn of the Caucasus, is one of its most challenging and coveted peaks. It has turned back many strong parties in the course of the last forty-three years, and has seldom been ascended. To make an attempt, therefore, would mean that one had much to gain, and with proper care very little to lose. With this realization in mind, Henry Hall, Jean Lozeron, the writer, and two native porters set out from Betsho on Monday, August 18th, 1930, to establish a high camp in the Gul glen.

The weather was doubtful on the morning of the 19th, but by 8 o'clock it had cleared. Lozeron, the writer, and one of the porters then set out with full climbing equipment and provisions for three days to reconnoiter and possibly to make the attempt. Unfortunately Hall was forced to remain in camp on account of illness. Had we had the benefit of his experience, our effort might have come nearer to success.

We knew at the time little of the history of climbing on the mountain, and local information as to routes was so variable as to prove completely worthless. For about an hour we proceeded up the rocks to the right (east) of the Gul glacier, gaining an altitude of some 700 ft. above the camp. At a point overlooking the glacier and immediately under the summit of Gulba we halted to make our decision. Three sizeable avalanches thundered down the couloir between the two peaks in the course of the next ten minutes, proving that this route was dangerous as well as difficult. It seemed possible to reach the southeast corner of the summit parapet on the south peak by the rocks of the southeast, or "Mazeri" ridge. Our glass revealed to us three or four fissures in the parapet, which might prove possible and lead us to the easier slope just below the summit. Of the southwest ridge, we knew nothing beyond what our porter told us, which was that five Germans had tried that route last year and had failed.

As the weather was bright and clear, we decided to go ahead and bivouac as high up on the southeast ridge as possible. We accordingly descended onto the glacier, being careful to keep low

enough to avoid the danger from avalanches. After crossing a few séracs, the going became easy. In about an hour we gained the east side of the rock wall at the foot of a couloir, which is marked by a snow mound of considerable size. This, I learned later, was well to the north of the couloir used by Schulze and Semenowski in their successful ascents.

Our porter, who had professed himself to be a hardy mountaineer and who certainly looked it, did well coming across the glacier, which was his first experience under a rope; but after we started up the rock he became visibly more and more nervous, and by noon he was so discouraged that he refused to go on. After careful illustrations in a snow patch to demonstrate that he should follow exactly in each footprint across the glacier, he was allowed to return alone. He left us, skipping down the mountain like a small boy, relieved of a very unpleasant task. We later ascertained from Hall that he followed our instructions to the letter, except that among the séracs he resorted to his hands and knees. All the same, it was a considerable feat for one obviously inexperienced in high mountain work. His pack we divided between the two of us, raising our loads to some thirty-five pounds.

Our route from the glacier lay up the couloir in a northeasterly direction. At the top of it, about 1,000 ft. above the glacier, we emerged on a ridge guarded by a series of formidable gendarmes. After a steep climb over the first of these, which took a full hour, we figured we were too far to the right (east). Accordingly we descended to the left, some 200 or 300 ft., across a patch of snow, and after traversing a series of rock shelves we found ourselves on the main southeast ridge. From this point on, climbing was easier, though it was up a gully covered with water, and the rocks sloped the wrong way. At 5 o'clock a good place to bivouac was found at about 13,500 ft. The night was comparatively comfortable. Avalanches of small rock swept continuously down a couloir beside the bivouac, but the only danger was from a possible deflection.

On account of slowly clearing clouds, our start in the morning was not made until 5 o'clock. Mounting on the side of a steep snow couloir (we did not take to the snow for fear of the falling rocks), we passed between two great gendarmes curved to the right and emerged on the crest of a steep snow-field overlooking the great sheet of bare ice under the summit wall on its south side. To cross this ice would have involved many hours of step cutting

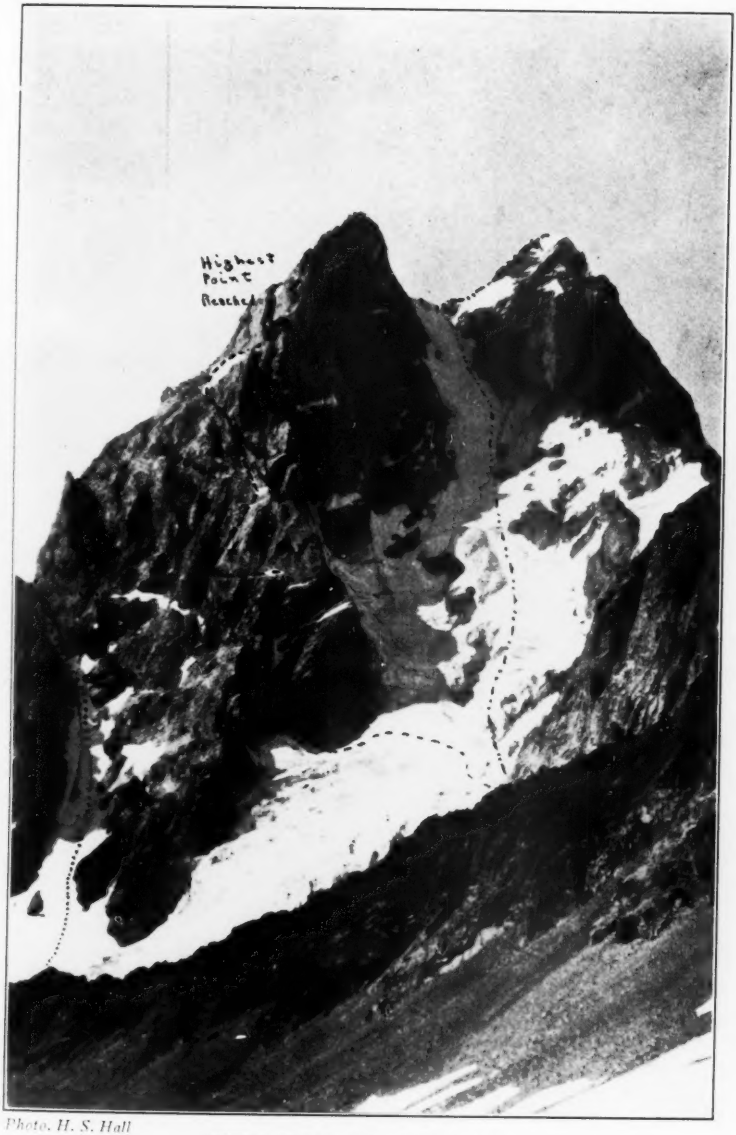
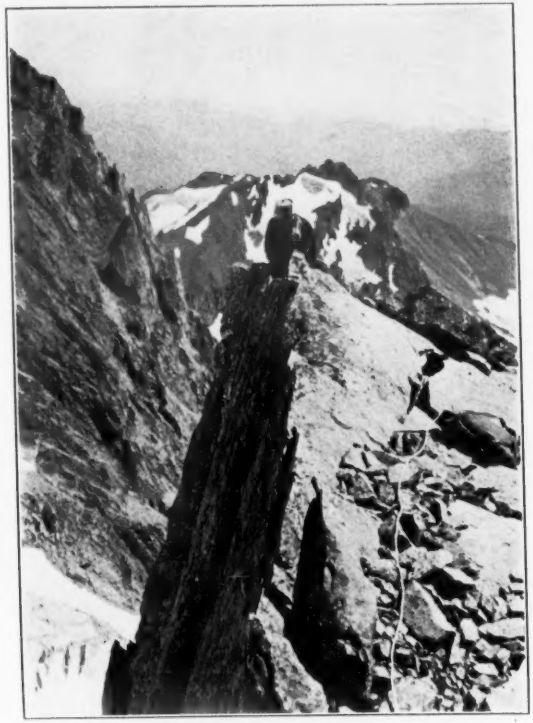


Photo. H. S. Hall

USHBA FROM THE SOUTH EAST

..... Route of Schulze, 1903, and Semenowski, 1929.
—·—·— Route of Cockin, 1888.
— — — — Route of Coolidge attempt, 1930.



Photo, J. Lozeron

ON THE ROCKS OF USHBA

Photo, J. Lozeron

ON THE GUL GLACIER

under constant exposure to falling rocks, so we turned our attention to the southeast corner, which we had already examined.

The going became more difficult as we headed to the northeast. All the rocks were smooth and they sloped off at the wrong angle. After jumping a small but eerie-looking rock crack and climbing along the edge of an ice couloir, we emerged some two hours later on a small level shoulder below the southeast corner of the wall. Three of our fissures proved utterly impossible, being blocked on their lower end by rocks or ice. The fourth looked barely possible. As we ran into some rotten rock at this juncture, Lozeron retired to a position safe from falling stones, and I went on unroped to reconnoiter. Progress became more difficult as I approached the chimney in question on account of verglas and the off slant of the rock. But at this point the wall is not excessively steep. Two-thirds of the way up the chimney, is an overhanging block; but from forty feet below on close inspection there appears to be a shelf of rock leading out to the right and around this. Beyond it one cannot see what obstacles there are, but a further climb of fifty feet up rocks which are somewhat broken by fissures would lead to the top of the parapet, and to the easier summit slope.

After long-range consultation, we decided not to go on further because of our inexperience and because of the dangerous nature of the route. It was necessary for me to *rappel* down from my perch to rejoin Lozeron. In the course of the descent two more longer *rappels* were necessary, but all the same we were back at the Gul camp by 8 o'clock in the evening, having returned by approximately the same route. Illness of Lozeron prevented any further attempt being made.

This particular southeast corner has been tried several times before: in 1888 by Donkin's ill-fated party, in 1893 by Collier, Newmarch and Sully, in 1898 by Rickmer-Rickmers and Hacker, in 1903 by Schulze and Von Ficker, but no one has been successful. It is the opinion of the writer that none of these parties reached the point he has described, which has an estimated altitude of between 14,500 and 14,800 ft., and that no one of them had a close inspection of the chimney in question. The south peak seems more nearly accessible by this route than is generally supposed. Should it prove possible, this route is far and away the best to the south summit on account of its comparative freedom from danger, the absence of extended ice work, and its directness. Should Ushba ever be sub-

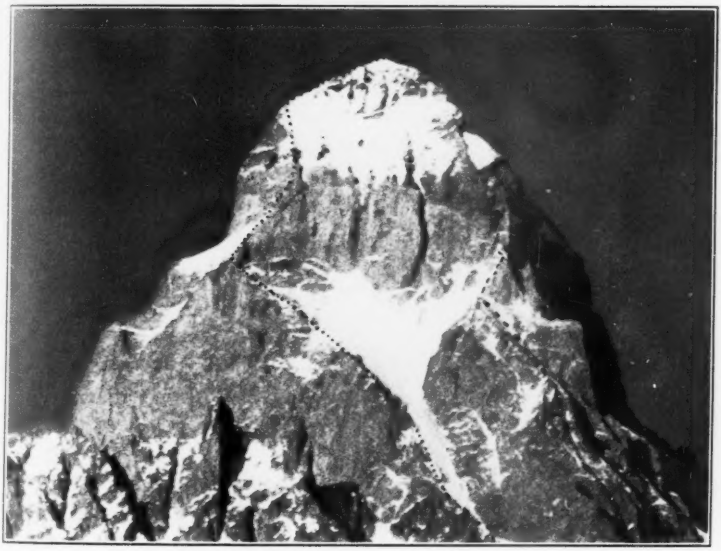
dued to the present state of domesticity of the Matterhorn, we can imagine a climb from Betsho via this ridge (with the aid of fixed ropes), which would combine the length and difficulty of the Zmutt ridge with some of the thrills of the Italian side. The matter is certainly worth further investigation.

Ushba has been ascended four times, the south peak twice, the north peak once, and once it has been traversed. The story of these ascents along with that of the numerous defeats is worthy of a book in itself. In 1888 Cockin, with Ulrich Almer as guide, after two unsuccessful attempts succeeded in gaining the north summit by the great ice ladder on the east side between the two peaks. This was a highly dangerous climb, one which under normal circumstances Cockin estimates would take at least eight hours of continued step-cutting. His success was due partly to extraordinarily favorable conditions. Even then he was forced to descend over the great schrund in the dark, and he completed the descent with only one shoe. Since then this couloir has baffled all comers, Woolley, Sully, Newmarch, Rickmer-Rickmers, Hacker, Merzbacher, Purtscheller and Cockin himself, who made several further attempts. Under present conditions of ice and snow, it seems very dangerous indeed.

In 1903 Schulze, with four German doctors, Helbling, Reichert, Schuster and Weber, made the first ascent of the south peak. This was by the rocks at the southwest angle. Less than a week before, Schulze had fallen the length of his rope (twelve metres) while trying to negotiate these rocks. Rickmer-Rickmers succeeded almost single-handed in lowering his unconscious form down the precipice. The successful party was caught on the summit in a violent thunderstorm, which transferred their rope into a chain of blue trembling light. They were forced to spend the night fully exposed to the storm, but in the morning the weather cleared and they were able to get off the mountain.

Seventeen days later, not to be outdone, Pfann, Distel and Leuchs performed the amazing feat of traversing Ushba, starting by the north arête of the north peak and descending by the Schulze route. This took them five days. They spent four nights on the ice, three of them without sacks, and two without food. When they descended into the gap between the two peaks, they abandoned themselves to Fate, as escape in case of bad weather would have been impossible. It took them six hours to cross the couloir up

South Face—Morning Light



South Face—Afternoon Light

USHBA FROM THE SOUTH

Enlarged telephotographs from motion picture films of Osgood Field. Coolidge route of 1930 at right in each; Schulze route (approximate) in dots at left.

Photo. V. Sella *Courtesy App. Mt. Club*

USHBA FROM THE SOUTH
Showing Route of Schulze, 1903.

which Cockin had made his ascent. There are few equal stories of daring, skill and endurance.

In 1929 Semenowski and three Germans, Bechtold, Merkl and Roechl, made the second successful ascent by the Schulze route. They were four days and three nights on the icy rocks. One night they spent on the parapet itself, looking down on the Ushba glacier, 4,000 ft. directly below them. At one point it took them five hours to advance some thirty feet. Such a route will never be easy or free from danger, even with fixed ropes and under the best of conditions.

Of the number of unsuccessful attempts on Ushba, there is no telling. Guesses range from thirty to fifty. In my search among the English records and a few of the French and German periodicals, I have found mention of some twenty attempts by first-class mountain climbers. What the full German records and the Russian records will reveal I cannot tell. There must also have been attempts, perhaps several of them, which have not found their way into print. Thirty seems a conservative estimate.

Climbing on Ushba has been tempered with just enough success to stir one on. It presents as much of a challenge today as it ever did. There is no reason why in the next few years we should not see a resumption of the annual attack, as occurred in the late nineties and in the first five years of this century.

To those who are thinking of making this attack, one can only repeat the sage words of W. Rickmer-Rickmers who, after four unsuccessful attempts on Ushba's walls in 1898, wrote, "And if the mountain taunts you and defies you to go on, then remember that you must also go back, and that everyone who comes home well has won an honourable day."

On Some of Gertrude Bell's Routes in the Oberland

MIRIAM E. O'BRIEN

IN 1901 and 1902 Miss Gertrude Bell and her guides, Heinrich and Ulrich Fuhrer, made a great many remarkable climbs in the Oberland. They were, of course, much more remarkable at that time than today, primarily because any first ascent is several times as hard, and immeasurably longer, than the same route known, marked on maps, and described in guidebooks; and partly also because current standards of difficulty are higher owing to recent developments in rock-climbing technique and skill.

Last summer, at the end of August and the first part of September, I repeated a few of Miss Bell's climbs, finding them interesting in themselves as climbs, and also for their historical associations. So much is just the same now as it was thirty years ago: the peaks, the chimneys, the glaciers! Whole pages of Miss Bell's letters to her family could have been written this last year, and they would have been as accurate in their descriptions as they were in 1901. On the other hand, so much has changed! Miss Bell enjoyed an "unexploredness" in these mountain regions that one does not find today. What fun she must have had wandering around the Engelhörner chain when "the whole place up there is marked with chamois paths, no one, I expect, having ever been there to disturb them."[1]

In the first place, we both, Miss Bell in 1901 and I in 1930, went to the Engelhörner to escape bad weather. Miss Bell writes from Rosenlaui in August, 1901: "I am established for a day or two in this enchanting spot, having been driven out of the higher mountains by a snowfall on Monday, which renders the big things impossible for a day or so. Here, there is a fascinating little rock range, that can be done in almost any weather."[2] I wrote the same thing to my family in August, 1930. And it may be worth mentioning that we both did these rock scrambles with our minds fixed on the northeast face of the Finsteraarhorn, intending, as soon as weather conditions would permit, to attempt its ascent. "All our thoughts are turned to the virgin arête on the Finsteraarhorn."[3]

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[1] *The Letters of Gertrude Bell*, p. 124.
[2] Op. cit., p. 123.
[3] Op. cit., p. 122.

Miss Bell's new routes and first ascents in the Engelhörner, although still amusing rock climbs, are nevertheless done every season by crowds of climbers—if not good, bad and indifferent, at least by the good and the indifferent—and I shall not take space here to describe them. But not so often done, probably because of its greater length, is the Welligrat. "Between the two Wellhorns there is an arête of rocks which has never been attempted—it is indeed one of the four impossibles of the Oberland—and we intend to do it and we think we can." [4] They succeeded on July 13, 1902.

Miss Bell's descriptions of the ridge seen from the Vorder Wellhorn could not be improved on today. "There was a most discouraging bit of smooth rock and above that an overhang round which we could see no way. My heart sank—I thought we should never do it. However, we set off and when we came nearer we found that these two places were not half as bad as they looked——" [5] That is true. The steep, smooth slabs at the beginning flattened out as we approached, and we could almost walk up without using hands. The overhang was very easily turned on the left. But Miss Bell's description of the difficulties of the rest of the climb, judged by modern standards, seems a little overrated. Beyond the overhang there was, it is true, a ridge of very loose and breakable rock, but the ridge was relatively broad. "And it [the ridge] ended in a sharp gap on the farther side of which two short but extremely exposed chimneys led up to the final slopes." [6] Getting up the farther side of this gap is, indeed, the only bit of real rock climbing on the whole ridge. We detected two routes besides Miss Bell's chimneys. Adolf is still convinced that the one he chose, around to the left of the ridge, is undoubtedly the easiest. Unfortunately he never got a chance to try it, since he was roped to me, and I went up Miss Bell's chimneys.

Miss Bell's party went down presumably by the east ridge of the Gross Wellhorn and, crossing the Rosenlaui glacier under the séracs, reached Rosenlaui that night. We continued on along the south ridge of the Gross Wellhorn until the gendarmes got too plentiful, when we went down the east face to the glacier, across the glacier to the little *sattel* between the base of the south ridge of the Wellhorn and the little rocky ridge known as the Wellhorn-

[4] Op. cit., p. 135.
[5] Op. cit., p. 137.
[6] Op. cit., p. 137.

grat (that continues to the south), along the latter, and up to the Wettersattel, which made a total ascent for that day of approximately 10,000 feet. We reached the Gleckstein Hut in time for supper and I, much to Adolf's disgust, decided to spend the night there and refused to accompany him down to Grindelwald that evening.

Finsteraarhorn

On July 31, 1902, Miss Bell and her guides set out from the Pavillon Dolfuss for one of the other big problems, which she had had in mind for two years, the northeast face of the Finsteraarhorn. "The mountain . . . comes down in a series of arches radiating from the extremely pointed top to the Finsteraar glacier . . . The arête . . . rises from the glacier in a great series of gendarmes and towers, set at such an angle on the steep face of the mountain that you wonder how they can stand at all and indeed they can scarcely be said to stand, for the great points of them are continually overbalancing and tumbling down into the couloirs between the arêtes and they are all capped with loosely poised stones, jutting out and hanging over and ready to fall at any minute."[1]

It seems to me that Miss Bell's arête is perhaps not sufficiently differentiated from the rest of the wall to bear the name "ridge," and might rather be called a rib. In any case, it runs up about two-thirds of this stupendous 3,000-ft. wall and provides a route exposed to fewer falling stones than the rest of the wall. Miss Bell's party followed this rib nearly to its top, the last part of the way in the face of threatening weather. They tried to turn the last gendarme, which presents a sheer, forbidding face of rock, by means of an iced chimney on the left, but conditions were so bad they could not advance, the storm broke in earnest, and they were forced to turn back. That night, in a raging thunder and snow storm, they bivouacked on the rocks just below their turning point. The next day they worked their way down the rib again, struggling against snow, cold, and wind, and having to rope down almost all the way over snow-covered rocks, with iced ropes. They bivouacked a second night on the glacier in pouring rain. Their descent was, throughout, a marvelous feat of endurance and courage.

After Miss Bell's attempt, and before ours, the wall was twice climbed, in 1904 by Gustave Hasler and Fritz Amatter, and in 1906 by Val Fynn and Brüderlin. These two parties bivouacked at

[1] Op. cit., p. 139.

the beginning of their climbs near the bottom of the rock wall, and the Fynn-Brüderlin party bivouacked a second night just before reaching the summit.

Adolf Rubi and I had had some thoughts of trying this climb in the summer of 1929, but the proper occasion never seemed to present itself. In 1930, however, our arrangements worked out better, and towards the end of August even the weather conditions seemed favorable. On September 2nd, taking Adolf's younger brother, Fritz, with us as porter, we went up to the Strahlegg Hut —which had not been built when the earlier climbs were done. We preferred starting early from the Strahlegg Hut to bivouacking, especially since, in September, a night out would be long and probably cold.

We left the hut at exactly midnight, and followed the regular route to the Finsteraarjoch. Near the Joch we met a bitter cold wind which was to be with us all day. Going down the other side, we wound around the base of the Finsteraarhorn wall until we were almost under the Studerjoch, where we sat down to wait in a spot somewhat sheltered from the wind. It was then ten minutes to four; we should have about an hour before daylight. But the cold was intense—I shudder to think what a bivouac for the whole night would have been like!—and after a few minutes, concluding that it would be light before we got to the rocks anyhow, we started on again up towards the enormous and wide-open bergschrund. As far as we could make out in the dark, the only possible place to cross the bergschrund was where the stones falling down the main couloir of the wall above—the couloir just to the left (looking up) of Miss Bell's rib—had worn a deep gully or groove in the ice of the upper lip and piled themselves up in a cone underneath. By standing on the top of this rock cone Adolf was able to reach across with the pick of his ice-axe and, not without difficulty, cut some holds in the groove above and pull himself up. The danger of this proceeding was somewhat mitigated by the earliness of the hour (4.30) and the coldness of the day. Adolf continued cutting up the very steep ice gully, when suddenly down the gully came a fall of stones. Fritz and I rushed for shelter to a place where the upper lip of the bergschrund was overhanging. What was happening to Adolf? Nothing, apparently, for when the stones stopped falling, the chips of ice began again, and the rope ran out in its accustomed little jerks.

When my turn came, I followed Adolf's route with feverish haste, impatient with the darkness that made it difficult to distinguish quickly the holds that he had cut in the hard ice. Finally—and with what relief!—I saw a line of steps leading to the left up and out of the gully. But before I could get to them, the rope below me tightened. I shouted to Fritz to come up, and to come up quickly. Then down the gully came another stone fall. There was nothing to do but crouch flat against the ice with my arms and rucksack over my head. The stones had apparently come from only a short distance, however, and were all small, as well as rolling gently. After I had been showered with them for what seemed like a very long time, there was a cry of warning from Adolf, above: "Stones are falling!" I supposed, of course, that this time there would be big ones. However, only the same gentle patter continued.

After gaining the rocks, we went up for a few minutes before turning to the right (northwest) to cross the big couloir, which we did as quickly as possible. This brought us over underneath a large red tower, the lowest gendarme of Miss Bell's broken rocky rib. Her party had gained this rib more directly than we had been able to do, by crossing the bergschrund on the right of the big couloir and reaching a little rocky promontory below the main rock rib. The Hasler-Amatter party had followed much the same route, while Fynn and Brüderlin had attacked the wall farther to the left —considerably farther to the left than we had—and crossed the big couloir higher up.

We climbed up along the rib, as all the earlier parties had done. I think probably we kept more on the crest of the rib than they did. Hasler mentions snow-filled couloirs, gullies and chimneys,[8] and Miss Bell says, "Every now and then we had to creep up and out of the common hard chimney, or round the face of a tower, or cut our way across an ice couloir between two gendarmes."[9] It must be remembered that they all climbed earlier in the season (July 16, July 31 and August 12) and no doubt they used snow-filled couloirs that we in September found iced and swept by falling stones.

[8] "The Northeast Face of Finsteraarhorn," G. Hasler, *Alpine Journal*, xxxiv, pp. 268-280.

[9] *The Letters of Gertrude Bell*, p. 140.

On the crest of the ridge there was no danger from falling stones, except from those unavoidably dislodged in huge masses by the man above. We turned the gendarmes whenever possible on the left (south); we were cold and wanted every ray of sun that we could get. But the sun went over to the other side of the mountain shortly after twelve and left the entire face bleak and frigid.

About half-way up we came to one pitch of considerable difficulty, which Adolf surmounted by climbing, for about forty meters, an exposed and difficult ridge on the north flank of the rib. This, I think, may be the place which Miss Bell mentions as being so particularly difficult (especially later, on the descent), where her party climbed up by means of an overhanging chimney on the left, on the south flank of the rib. I noticed such a chimney there, although only Fritz used it.

Farther up the ridge "the towers multiplied like rabbits above and grew steeper and steeper. . . . The ridge had been growing narrow, its sides steeper as we mounted, so that we had been obliged for some time to stick quite to the backbone of it; then it threw itself up into a great tower leaning over to the right and made of slabs set like slates on the top with a steep drop of some twenty feet below them on to the col." [10] This is the gendarme that Hasler calls the "Great Grey Tower" and which he characterizes as "the key to the mountain." [11] "So we tried the left side of the tower: there was a very steep iced couloir running up at the foot of the rock on that side for about fifty feet, after which all would be well. Again we let ourselves down on the extra rope to the foot of the tower, again to find that this way also was impossible. A month later in the year I believe that this couloir would go; after a warm August there would be no ice in it, and though it is very steep the rocks so far as one could see under the ice, looked climbable." [12] Miss Bell was quite right in thinking that the couloir would go, although even in September it was ice-filled. We must not forget, however, that the couloir seemed more possible to us because we were not climbing it in a snow-storm, and we had, moreover, the knowledge that the couloir *had* gone before, which is of inestimable value in getting up a difficult pitch. But in saying that "after [the couloir] all would be well," Miss Bell was unduly optimistic and it is perhaps just as well that she did not get up, above the

[10] Op. cit., p. 140.
[11] Hasler, op. cit.
[12] Bell, op. cit., p. 141.

couloir, to try in a raging snow-storm to climb the steep final walls of the face.

After we had roped down to the left for about twenty-five meters, Adolf cut holds up the brittle waterfall-ice in the couloir for a short distance and then out to the left on to a wall of loose and ice-glazed rocks. After about ten meters of real difficulty, we reached gently sloping slabs of rotten rock covered with loose stones. Here the climbing was very easy but dangerous. Stones might fall from the final wall that rose, menacing, straight above us, or pieces of ice and frozen snow from the ice-sheathed rocks and the cornices of the summit ridge. After about eighty meters we could traverse to the right to approach the ridge again.

Here our route diverged markedly from everything that had been done before on this wall. From this point the other two parties had continued straight up, presumably in the shallow couloir just to the left on the south flank of the rib, a narrow couloir that apparently drained all the falling ice and stones from the steep walls above. Amatter remembers hard snow here at the time of his ascent, but when we were there the couloir was ice-glazed and so long that cutting up it would have been an interminable process as well as a dangerous one, if, indeed, it would have been possible at all. Farther out to the left, also, the ground looked uninviting—exposed to too many falling stones.

We turned to the right, therefore, and a short traverse brought us on to the ridge. From there we could not work upwards, either following the crest of the ridge, which here rises in a perpendicular step, or upon its north flank. Below on the north was a vertical sheet of ice and an unbroken drop of several hundred meters. The only possibility seemed to be a traverse still farther to the north into a small chimney thirty meters away. This traverse along a vertical wall of ice-glazed rocks with all the handholds and footholds loose and icy cold was a passage of extraordinary difficulty. It was by far the worst passage on the whole face. I held my breath while Adolf worked his way, slowly and surely, across, and felt an intense relief when he arrived safely in the chimney. He then climbed up the chimney for about twenty meters to a little platform. I started over, and I have rarely been so surprised as I was when I got across that traverse without falling off.

From there to the summit, I can see every step of our route up those fearful, ice-coated walls, and Adolf with tremendous energy

Photo. R. Schudel, Grindelwald

THE NORTH EAST FACE OF THE FINSTERAARHORN

(Route lies up buttress between arrows.)

Photo. M. E. O'Brien

FINAL SLOPES OF FINSTERAARHORN WALL ON SIDE ASCENDED

and vigor hewing out huge chunks of ice and hurling down whole armfuls of rocks in his efforts to find something to use for a hold. There was one pitch where Adolf climbed the full forty meters of rope between us and still found himself in a very uncertain position on steep ice. Somehow—no one knows how—he managed to get a spare rope out of his rucksack, tie it on, and then go on fifteen meters farther before he reached a firm stopping place. The last forty meters before reaching the summit ridge were glare ice, and very steep, with a few rocks sticking out here and there. (See illustration opposite.) But these rocks were held in position only by the ice itself, and any chopping intended to make them serve as holds merely dislodged them.

At last we reached the northwest ridge and the ordinary route up from the Hugisattel, about sixty meters from the top (northern summit). The other parties had both reached the southern summit first, and from the left (south). What a joyous gambol along a broad and level path were those last sixty meters! At half past five, thirteen hours after we had started up the wall, we reached the top of it. How pleasant to lie there sheltered from the wind, eating, enjoying the delicate sunset colors and even, from time to time, peering over the edge at the northeast face!

After a long time we rolled up some of the ropes—a party of three does not need ninety meters of rope to descend the ordinary route on the Finsteraarhorn—and strolled casually down, reaching the Finsteraarhorn Hut at 8 o'clock, twenty hours after we had left the Strahlegg.

Reminiscences of Seven Summers in Canada

CONRAD KAIN

MY FIRST two climbing seasons, 1909 and 1910, in the Rockies, were spent along the main line of the Canadian Pacific Railway. In 1911 I joined Mr. A. O. Wheeler's survey, covering the territory from Jasper to Yellowhead pass and Mt. Robson. From Maligne Lake we returned to Banff via Wilcox pass. The most interesting ascents for me that season were Whitehorn, a first ascent which I made alone, and the first ascent of Resplendent in company with Mr. Harmon, of Banff. I enjoyed the trips through the mountains with packtrain, and was delighted with camp life, although on many occasions the mosquitoes made me long for other mountains where these persistent pests are unknown.

In general, I adapted myself to the New World and its ways, but at times I caught myself meditating. Visions of the Alps and the Dolomites would flash through my mind, linked up with Old World memories—of life in the inns, with music and song. I realized that these were symptoms, universally known as "Heimweh," but fortunately I was well fortified with a prescription for this malady. It read: "Take life as it comes, and make the best of it, and always be your own adviser in small matters." But this did not help me much at the time; there was something missing, and therefore I was not quite happy.

Early in the spring of 1912 I received a letter from a man whose acquaintance I had made in the mountains. An invitation to join an expedition to the Altai. At once I decided to go, for I I felt sure I would have a chance for a stiff and sporty climb. In this I discovered what was lacking in the Rockies; it was a climb with thrills and plenty of them.

For several years before I came to Canada I climbed in the Alps, and, in those days, made some of the sportful ascents more than once in a season. My favorites were the aiguilles of Mont Blanc and the mountains of Dauphiné. In the Dolomites I considered the following climbs ideal: the Vajolet Towers, the east face of Rosengarten, the Fünffingerspitze by the Schmitt-kamin, the south face of Marmolata, and the north wall of the Kleine Zinne. I was so infatuated with the Guglia di Brenta that I went many miles out of my way to climb this majestic pinnacle. In the three seasons that I spent in the Rockies I had not made a single climb,

MT. WHITEHORN ACROSS BERG LAKE

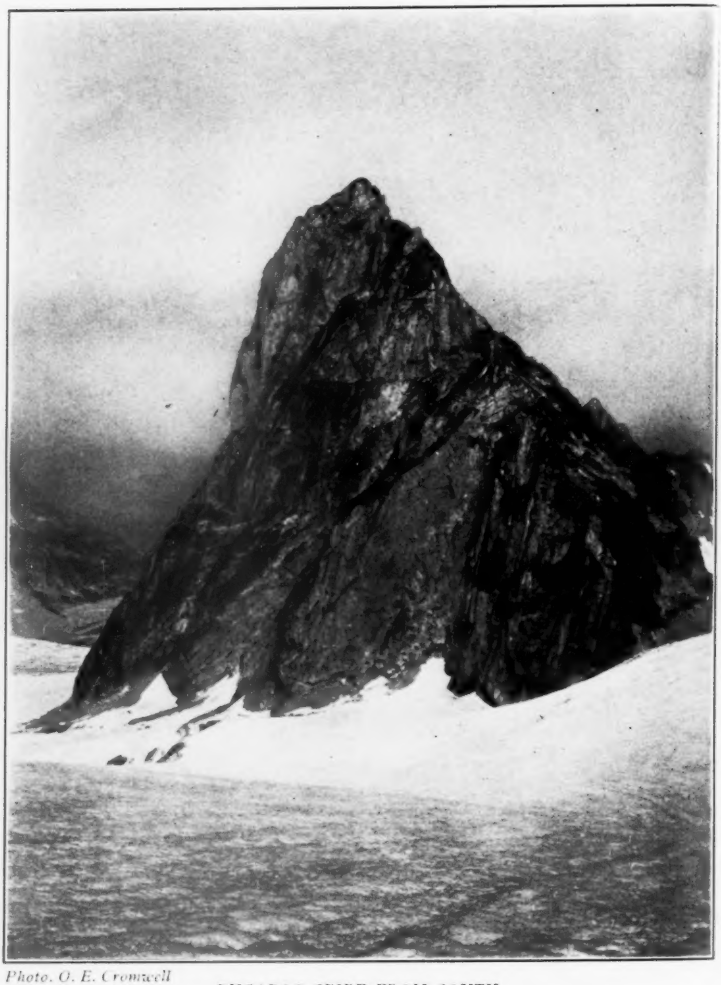


Photo. O. E. Cromwell

BUGABOO SPIRE FROM SOUTH

From near Pigeon Spire. Ascent by MacCarthy party followed right profile.

and did not expect to make one, that could be compared with any of these.

After my journey to the Altai Mountains I visited my old stamping-grounds in the Dolomites and the Alps, and made a few difficult climbs, quenched my three-year-old thirst with beer and had a jolly time, living my youth over again. It was beautiful yet strange; it made me feel very lonely—I longed for the solitude that one finds in the Rockies; for the campfire and the carefree life.

In June, 1913, I landed in Canada after a long voyage from England by way of Australia and New Zealand to British Columbia. On my arrival I was told that I would have an opportunity to climb Mt. Robson. This came to pass, and I traversed the mountain in August with A. H. MacCarthy and W. W. Foster. I have ascended Mt. Robson several times since; my verdict is that it is long and offers many problems to the leader. No matter from which side the ascent is made, there are dangerous sections, even under the best conditions. He who hires himself out for such a climb earns his pay, and the amateur who can lead to the summit is in my opinion a full-fledged mountaineer.

In 1914 the most interesting climbs I made were Farnham and the Farnham Tower in the Purcell range. The tower offered rock-work to my liking, and these ascents compared well with climbs in Dauphiné. In the summer of 1915 we made additional climbs in the Purcells, but nothing of outstanding interest. This was my third visit to this range, and its mountains and valleys fascinated me.

The season of 1916 turned out to be the best I had had in this land. On July 19, with A. H. MacCarthy, I made the first ascent of Mt. Louis, near Banff, the most interesting rock climb I had made in the Rockies. Next-best was the descent of the east face of Monument Peak, on the north fork of Toby Creek in the Purcells. Several years later I pointed out the route to a prospector, who remarked, "Say, you are either a fool or a doggone liar!"

The summer came to an end with a trip to the Howser and Bugaboo Spires, and it was in this group that we made an ascent which I found as interesting and difficult as any I have encountered in the Alps. None of my subsequent ascents in the Rockies provided such thrills as the Bugaboo Spire. Believing that this may be of interest to mountaineers who prefer rock-climbing, and are looking for new ground and virgin peaks, I will give an account of this adventure.

The Howser and Bugaboo Spires are reached in two days from Spillimacheen in the Columbia valley. The group shows up prominently from Sir Donald and from peaks at the heads of Toby and Horsethief Creeks. On a clear day it is visible from the higher summits of the Rockies. I had been twice in this section, but it was not until August, 1916, when we walked around the spires in search of the highest of the group, that I had a chance to examine the pinnacles at close quarters.

These peaks are as yet unnamed on maps, although Longstaff refers to them as "The Nunataks," and MacCarthy designates them from south to north as "1, 2 and 3." The well-known guide, Edward Feuz, Jr., suggested "Aiguilles" for this group, as the spires resemble the aiguilles of Chamonix even more than Mt. Assiniboine duplicates the Matterhorn. Spire No. 2,[1] with sheer cliffs on all sides, is the most picturesque of all and rises some 2,000 ft. above the glacier. After carefully searching with powerful binoculars I came to the conclusion that this pinnacle will prove very hard to conquer. Since then I have had the opportunity to study the peak from different angles, and have not changed my opinion. I feel inclined to prophesy that this pinnacle will be the most difficult ascent in the Canadian Alps.

As our time was limited, we chose Spire No. 3[2] for our climb in this section, as it was not so forbidding. On August 29 we left camp at 4.30 A.M., the party consisting of Mr. and Mrs. A. H. MacCarthy, Mr. J. Vincent and the writer. The real climb, beginning at the saddle between No. 2 and No. 3, offered interesting but not difficult rock in the first thousand feet. Before reaching the main ridge we encountered two chimneys, about thirty feet high, and several smooth slabs which required both care and technique.

On the ridge we halted and studied the route to the summit, which was in sight. Before us rose a most formidable gendarme, whose base spanned the width of the ridge. Its western wall ran up in prolongations of cliffs that rose from the glacier far below, and its upper edge lifted sharply like a horn to the point where it joined the high, smooth east wall. The western side was blocked by unsurmountable cliffs. The face of the gendarme looked anything but inviting and the only chance was to skirt around on the east

[1] The "Snowpatch" peak of the following paper.—Ed.
[2] "Bugaboo Spire" of the following article.—Ed.

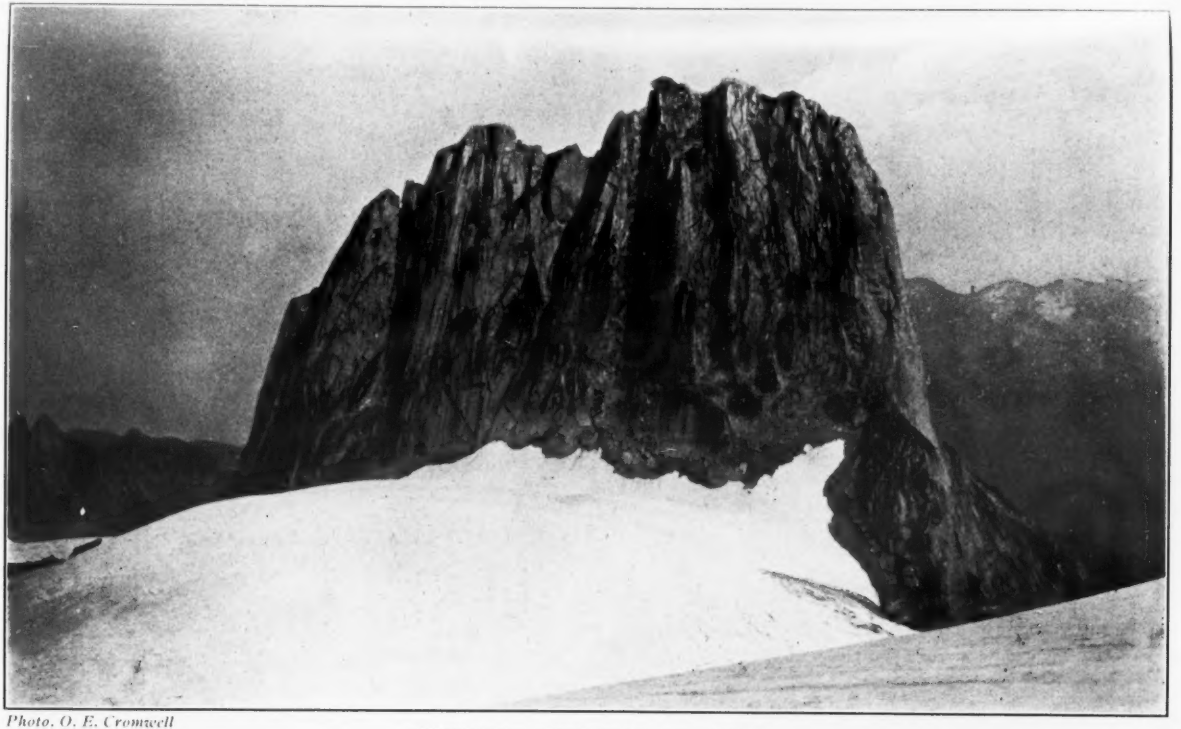


Photo. O. E. Cromwell

SNOWPATCH SPIRE FROM THE SOUTH

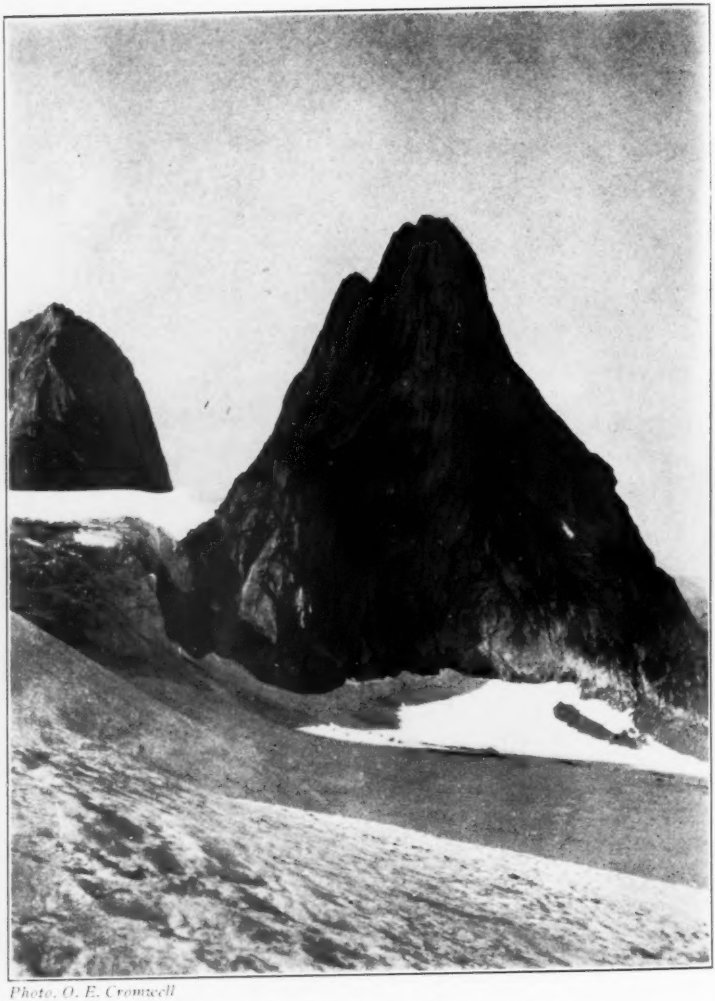


Photo. O. E. Cromwell

SNOWPATCH SPIRE FROM THE SOUTHEAST

side. Before reaching the base of this barrier we encountered several hard bits; in fact, on peaks of the Rockies, where the stone formation is rotten, such places would be termed difficult and dangerous; but when every hold is solid, difficulties are welcome and met with a smile.

A broken section led down for about forty feet to a ledge, three or four feet wide, and ended in a 2,000-ft. drop. The wall above this was split in several places, but the breaks were far apart. We returned to the gendarme and after a short rest I tackled the perpendicular fifteen-foot wall. Several diagonal cracks offered firm handholds, but were not large enough for the toes; the old proverb, "Half a loaf is better than none," comes often to the climber's mind. Near the top I was stuck for a few minutes, the edge being smooth and without holds of any kind. I applied the vacuum grip and pulled myself up and over.

A few feet higher up was a dent that resembled a saucer, from which I studied the surroundings and looked for a way out. It was a tight corner; to my right the wall I had come up, and to the left a holdless slab beyond a short crack, crowned with a slight overhang. Above me a straight wall, ten or twelve feet, led to a slab, after which nothing was visible except space filled with mist through which a streak of blue ice appeared.

The only possible way out was to the left. There was not room for two on this edge, nor was there a projecting rock or crack for anchorage, so I had to depend entirely on myself. I managed to wriggle over the holdless slab, and when I next tried to get into the crack I was stopped. Convinced that I had started wrong, and as there was no chance to change my position, I crawled back to the edge and began again. To my surprise I found myself in exactly the same position as before; but I grew bolder and stood up, balanced on the toes of my left foot and made great efforts to get into the crack, but could not find a hold.

The endurance required in balancing one's whole weight on the toes should be cultivated. Again I returned to the starting point. Searching my memory for something which resembled this bugaboo, I found the picture. Many years ago, in Tyrol, I battled with just such an obstacle as I now had before me. I recollected that I had then overcome it with the aid of an ice-axe; fortunately we had one in the party. My plan was to place the axe in a position to take the weight of the left foot, the only one I could make use of,

and at the same time lift myself a few inches higher. This I thought would enable me to put my arm into the crack, which appeared just wide enough so that I could use the elbow on one wall and the palm on the other.

All went well according to this plan. Once in the crack the axe was not only useless but proved a real nuisance. I found myself in such a position that I could not dispose of the axe in any other way except by letting it drop. This I would not do, so there was nothing to do but go back once more and make other arrangements. Finally I succeeded in pulling myself up the crack and across the overhang. To my great relief a slanting crack about two inches wide led me to a safe place. I was now only seventy feet above the others, but it had taken me an hour and a half to overcome this stretch.

To illustrate how difficulties appear when a rope is present and the second climber knows that it will be properly handled by the man ahead, I quote from Mr. MacCarthy's account (*C. A. J.*, viii, p. 17) of this part of the climb: "We then bent on two spare ropes and with the aid of a double rope went up, one at a time, fully realizing, as we passed over the top stretch and up the broken course above, that the real climb on a mountain is the one made by the guide." The portion between the gendarme and the summit afforded interesting climbing. The barometer registered 10,250 ft. on the first peak, and, as we were not certain of the highest point, we started for the second a few hundred yards away. We encountered a break-off some twenty feet high, over which we roped-off, leaving the rope for the return trip. About half-way we were forced to the edge of the east wall, the only safe method being to straddle this section. Then we met with several smooth knobs, which would have been of no consequence on a safe place; but on the edge of such a sheer wall we hugged them tight. A short, irregular chimney landed us on top, the barometer reading exactly the same as on the first summit.

The view was grand, especially of the nearest spires. No. 2 fascinated me more than any other peak in sight, though I didn't see a possible chance for a route. I made up my mind that some day I would make an assault on this dignified-looking needle. In descent, as a rule, I never worry how I am going to get off a peak; but on this occasion I did. I was not sure if I could descend the gendarme without taking too much risk. While coming up I heard

Mr. McCarthy whisper to the others that he felt confident I would not descend over such a place if any other possible place could be found. I concealed my fear carefully.

It was in the early days of my career as a guide that I learned that the leader on any climb must hold the confidence of the party. This is not always so simple. Having thirty climbing seasons to look back on, I could write columns on this subject. To mention a few of the points a guide should bear in mind will not be amiss. First, he should never show fear. Second, he should be courteous to all, and always give special attention to the weakest member in the party. Third, he should be witty, and able to make up a white lie if necessary, on short notice, and tell it in a convincing manner. Fourth, he should know when and how to show authority; and when the situation demands it should be able to give a good scolding to whomsoever deserves it.

When we arrived at the gendarme we made a halt and looked over all sides. I decided that the safest way would be to rope-off on the east wall, behind the gendarme to the lodge mentioned in the ascent. Fortunately we had three ropes along, two of eighty feet and one of a hundred and twenty feet. Having tied the two shorter ropes securely together, I threw the end down to measure the height. Luck was with us as it just reached the ledge, about six feet from where it ended in sheer wall.

Roping off is a thrilling adventure, but not dangerous if properly carried out. The most unpleasant thing that can happen is when the rope itself gets stuck. I took all precautions to avoid such trouble, and having found a projecting rock I tied my coat in the center of the rope to prevent it from getting pinched. Halfway down a small ledge offered a chance for a rest, but this and the narrow, sloping ledge below were not places to linger and enjoy the view. So everyone made the eighty feet down without a stop and all were glad to reach a safer place.

The rest of the descent was made without any difficulties, and so ended the most interesting climb I had in my seven seasons of Canadian mountaineering. Without hesitation I say that the ascent of Bugaboo Spire offers as many thrills and difficulties as any of the aiguilles in the Alps which I have climbed. I also feel confident that mountaineers who make a trip to this group of the Purcells will not be disappointed.

In the Bugaboo Group

EATON CROMWELL

THIS seldom-visited group is surely deserving of greater popularity. The climbing compares favorably with that of the minor European centers, and it is easy to reach; our camp being only a day and a half from Spillimacheen in the Columbia River valley. Spillimacheen itself is but a morning's motor run from Golden, B. C., and is served not only by a bus line, but also by the Canadian Pacific Railway, a branch of which ascends the valley.

A part of the Purcell range, the peaks are the westernmost of truly Alpine character, and contain several summits of an altitude well over ten thousand feet. The rock is largely granite, firm and weatherproof, lending itself to a mountain architecture truly startling. Some of the pinnacles seem quite inaccessible, and will succumb only to a formal siege, if at all. The best efforts of our finest rock climbing specialists would not be wasted here.

The first party to visit and describe the district was that of Dr. Longstaff and Mr. Arthur O. Wheeler, in 1911.[1] They were much handicapped by bad weather, and did practically no climbing. The second party was that of Dr. J. W. A. Hickson, with Eduard Feuz, Jr., in 1916. They were driven back by bad weather from several attempts on the Howser Spire, and finally left after a severe snowstorm had made further efforts obviously useless. Later in the same season Captain A. H. MacCarthy's party, led by Conrad Kain, had better fortune, and made the first ascents of the two highest summits, with several others not mentioned in his article.[2]

Conrad Kain is now an outfitter, and has a ranch at Wilmer, B. C. We met at Spillimacheen the fifth of August, 1930, Conrad with his outfit, including George Rennenkampf as wrangler; Peter Kaufmann, of Grindelwald, guide, and the author. The weather was perfection, and every omen indicated that it would continue so for some time to come.

Toward the end of the next day, we turned up the southwest fork of Bugaboo Creek, known as Rocky Point Creek, enjoying occasional glimpses of a most impressive crown of sharp rock peaks walling in the *cirque* at the head of the valley. At dusk we made

[1] "Across the Purcell Range of British Columbia," by T. G. Longstaff. *C. A. J.*, Vol. III, 1911, p. 26.

[2] "The Howser and Bugaboo Spires, Purcell Range," by A. H. MacCarthy. *C. A. J.*, Vol. VIII, 1917, p. 17.

Photo. O. E. Cromwell

HOWSER SPIRES FROM SUMMIT OF PIGEON SPIRE, LOOKING SOUTH WEST

Photo, B. Harmon

BUGABOO GROUP LOOKING SOUTH WEST

a well-sheltered camp in the woods near the toe of the Bugaboo glacier. A clear stream flows close to the camp site, and the level ground on which we pitched our tents was a much appreciated luxury. From here it took only about two and one-half hours to reach the actual climbing, over easy glacier and moraine.

The glacier extends southwards into the group, in shape resembling the wrist and fingers of the right hand, the little finger being severed from the rest by a large moraine. The peaks rise around the edge of the hand, and between the fingers; the back of the hand being a large ice plateau.

The morning of the seventh we left camp at a very comfortable hour, planning to do no more than make a reconnaissance of our principal quarry, a peak we had christened "Snowpatch" because of a prominent little snow slope half way up the north side, the attainment of which is probably the key of the ascent, if it be possible. Conrad came a short way with Peter and me, returning to work about the camp.

We ascended the glacier to the ice plateau, and turning to the northwest followed the crest of a long steep moraine to the foot of "Snowpatch." We followed its rocky wall around to the right, seeing as we progressed less and less hope of climbing it. If it were made of well riveted boiler plate it could appear no more difficult, and most of the north wall actually overhangs. The secondary glacier—the little finger—on which we now stood led steeply but easily up to a col between "Snowpatch" and the "Spire"; the latter being one of the peaks conquered by the preceding party. At the col we took a rest and looked the country over.

The only unclimbed peak that seemed at all possible was the "Pigeon Spire," immediately before us. Leaving the lefthand mountain behind, as being clearly hopeless from this side, we walked across the glacier to the southern end of the long ridge, and after a short rest, began our climbing, having left all impedimenta behind except a piece of chocolate and the kodak. The difficulties met as far as the southern summit were not very serious. The aspect of the ridge from there, which leads up to the shoulder was so formidable that we seriously considered a retreat. However, one cannot tell by looking, so we descended to the saddle and discovered that the climbing was far easier than we had any reason to expect, and soon found ourselves on a shoulder, separated from the summit block by a deep notch. This face of the summit was abso-

lutely unclimbable, but a traverse around it seemed just possible, using a narrow vertical chimney to descend upon the northwest face, which turned out to be less savage than it had appeared from below. Sloping ledges brought us around to the north ridge, which we gained by an interesting "jam-crack" just large enough to permit the insertion of right foot and knee. This led away at an angle of approximately forty-five degrees, and after thirty or forty feet petered out into a "finger traverse," the key of the climb. While I belayed the rope as securely as I could, Peter crept carefully along, supported as much by the friction of his clothes against the rock as by the narrow crevice into which he slipped his fingers. The ridge once gained, ten minutes of easy going brought us to the cleft summit and a magnificent panorama of the group, the Howser Spires especially appearing to great advantage. We stayed to enjoy the view until shortly after three o'clock, the actual climbing having taken about three hours, and descended by the south arête and the glacier on the southeast side. Thus encircling the peak and arriving at camp at a quarter to seven.

On the eighth Peter and I decided to have a look at the southeast side of the group, and ascended the "Thumb" glacier to the north ridge of the mountain which, with Howser Peak, forms the retaining wall of the glacier system. The climbing is very easy, and we soon made the traverse, descending on the further side again to the upper snow basin of the Bugaboo glacier, which we crossed to the col at the foot of the west arête of Howser Peak. The latter we climbed after lunch, finding *en route* a cairn left by Captain MacCarthy and Conrad, on the 28th August, 1916. We descended by the main branch of the glacier, having to dodge on the way stones dropping from the western face of "Rock Ridge Peak," which is the principal contributor to the moraine of the right bank.

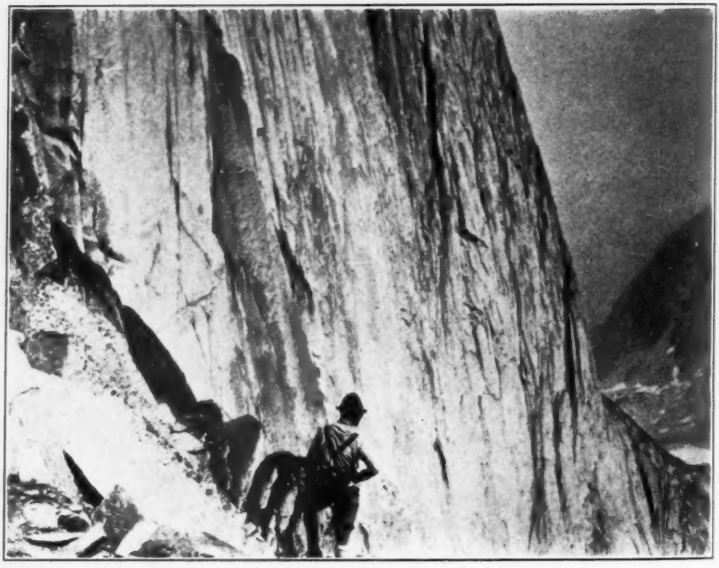
Followed a day of rest because of rain, and on the tenth, we decided to celebrate Conrad's birthday by an attempt on "Center Peak," also called "Marmolata." The weather held us back until quarter after nine, when the slight drizzle ceased and the sun began to show. Wet through by the woods, we quickly dried off walking up the glacier and moraine to the foot of "Snowpatch." From here we crossed the southwest glacier arm to the prominent depression, almost a saddle, in the north ridge of Center Peak. The route is unmistakable, the ridge leads straight to the top, and affords excellent and interesting climbing, in places of a high degree of

Photo. O. E. Cromwell

PIGEON TOWER FROM SNOWPATCH—SPIRES COL
Looking South

Photo, O. E. Cromwell

SNOWPATCH SPIRE FROM HALFWAY UP BUGABOO SPIRE



Photo, O. E. Cromwell

EAST FACE OF BUGABOO SPIRE FROM THE RIDGE

difficulty. These pitches might be flanked by traverses on one face or the other, but the ledges are so sloping, and the rock so loose, that it is easy to do the sporting thing and keep as much on the crest as possible. Just below the summit, we were stopped by a vertical, holdless pitch some twelve to fifteen feet in height. This Conrad beat by taking a back-stand furnished by Peter and myself, inserting the pick of his ice-axe into a horizontal fissure, and swarming up the handle until he could get his fingers into the crack. From there he swung out to the right, found a small ledge, and was up. I didn't find it very easy, being the last. The axe came away, and I was left suspended like Mahomet's coffin, 'twixt heaven and earth, until a long pull, and a stout pull, brought me also to the top. We had used some three hours on the ridge, and it was now 5 o'clock. Consequently we gave up the idea of attempting a descent by the south ridge, and returned the same way, reaching camp at 9 o'clock. The following day I had an opportunity to inspect that same ridge, and was heartily glad we had not attempted it, as it breaks away in giant steps, and to rope off from them would have required far more rope than we possessed.

On that day Peter and I ascended the main glacier branch, and traversed the two little peaks at the head of it, which we called "Thimble" and "Flat Top" for obvious reasons. They are entirely devoid of mountaineering difficulties, but make a very pleasant rest day, and the latter, especially, offers a sensational view of the southerly wall of the Howser Spires, which from this vantage point appear quite as impressive as the Chamonix Aiguilles.

On our last day we were turned back in an attempt on the Bugaboo Spire, one of the party becoming indisposed just under the great gray tower; this is a magnificent climb, and will some day be ranked with any in the Canadian Alps. It was the one I enjoyed the most, in spite of non-success, and I look forward to another tussle with it and its even more difficult neighbor. A good supply of *mauerhaken*, plenty of rope, and *kletterschuhe* are not to be despised in this district.

To the northwest of this glacier basin lies another, immediately adjoining, about which are grouped several peaks which would well reward a climbing party. As far as I know they have never been attempted, and perhaps not even visited. Conrad believes he can take a pack train there, and it is something well worth a trial. To whomsoever it falls, "*Bergheil*" and lots of luck!

Gleanings in the Canadian Rockies, 1930

MAX M. STRUMIA AND WILLIAM R. HAINSWORTH

MT. ROBSON

IN PLANNING a mountain trip, few of us will wilfully detract from the pleasure of it by giving more than the barest minimum of thought to the uncertainties of bad weather and its relation to the fulfillment of the program. Perhaps this explains the feeling that nature was a little unfair in presenting us with a full week of dismal weather during our sojourn at Mt. Robson. Certainly we would have expected the reception had we more seriously considered the July weather records for the region over a period of years. Be that as it may, in the early afternoon of July 2 we left the horses and trail just above Emperor Falls and with heavy packs started up a rocky brule toward the great northwestern ridge of Mt. Robson with the hope of working out a new route to the summit. The group at first consisted of Newman Waffl, William Hainsworth and Max Strumia. We crossed some loose rock slides and easily ascended the first tier of cliff belts. The second tier, a short distance above, proved more difficult. At length we found a passage along a couloir running to our left over smooth water worn rocks and under high overhanging cliffs. On this side of the mountain four such belts of cliff are clearly seen from below.

We bivouacked at the head of the couloir close to the northwest ridge at a height of about 7,500 ft. and then our adventure with the weather started. The mountains around us soon disappeared in a thick grey mist which later turned into a steady snowfall throughout the night. Waffl and Hainsworth attempted a tour of exploration the following morning but were turned back by a biting snow-laden wind. Needless to say, we returned to the Berg Lake Chalet. On the way down we met John Lehman, the fourth member of our party, just in time to save him the discomfort of a wet and lonely night on the mountain.

On July 4 while waiting for the weather to clear, Hainsworth and Lehman ascended Mt. Mumm, and Waffl and Strumia did some interesting rock climbing in the direction of Peak Saurian. Both parties found a great deal of fresh snow, and more fell the following night.

However, on July 5, to relieve the increasing irritation, we decided to return to the high camp which we moved further up to the right above the third tier of cliff to a height of about 8,000 ft. Our arrival was properly celebrated by a display of hail, snow and high wind. But hope springs eternal in the breast of amateur climbers. At twilight it cleared, and we ventured out on the little wind-swept platform to admire the luminous glory of Mt. Whitehorn, blazing through fast-traveling clouds.

For some of us at least, there was not much pleasure in being up at 1.30 next morning. Hainsworth, indeed, feels that one very prominent feature of our adventure was the new conception of time so forcibly thrust upon him and others. As suburbanites, we live in a time groove, but as climbers throughout the coming weeks we arose at anytime between midnight and noon, had breakfast when we were supposed to have dinner, and usually had nothing when we were supposed to have luncheon. The ground and tents were white with fresh snow, and ominous clouds gripped us in a shivering embrace as we set out at 2.40. Following much discussed and often changed plans, we moved diagonally to our right, around a spur joining the northwest ridge. This spur formed the right side of the large triangular, furrowed face above our camp. Shortly after 3 A.M. we reached the base of the great western face, beyond the spur.

For about one hour we followed the foot of the fourth tier of cliff belts, which at this point is impressively formidable, and finally selected as our lead the third pronounced cleft after rounding the spur. We first scrambled up a steep, ice glazed staircase, and then after kicking steps through the comparatively easy lower slope of the couloir, found it necessary to cut steps in ice to its upper part. This, after a steep, tortuous course, seemed to die in fog-haze against perpendicular ice glazed rocks. As we followed the neck of the couloir, the storm assumed a more menacing form and repeated blasts of hail came hurtling out of gray space against the thousand ribs of the great face invisible, above. A rivulet of frozen snow began to pour down upon us, filling every niche and the steps we had cut so carefully. The couloir ended in an ice-filled crack, wedged in between smooth rocks. Strumia worked here for about one hour, and with the aid of two pitons and a few abortive holds, scraped out of the black ice-glaze, managed to get half-way up. But he was unable to keep his center of gravity close enough to an

icy overhang to justify further attempts to pull over. Being open-minded in such matters, Strumia asked our advice, and shortly the rope was reversed for the return. This must have been sometime around 6 A.M. The steep rocks at the base of the couloir covered with soft snow proved very difficult, even with the aid of a long safety line. At 8 we were at the base of the couloir, whence Lehman and Strumia returned to camp, while Waffl and Hainsworth scouted along the shale slope as far as the "Wishbone arête." Little was accomplished, however, by the long trip around the base, as the snow and hail storm still persisted. Several rivers of hail had to be forded on the way back to camp; the streams were twenty to thirty feet wide, about two feet deep, and had sufficient velocity to make the footing uncertain. The excitement was increased by the ominous hissing of electrical discharges. There was only one thing to be thankful for: that we were not on the upper ridge! Late in the evening we returned to the chalet, in time to avoid a long and violent storm.

Next morning Hainsworth, Lehman and Strumia crossed Berg Lake in a boat, and, having ascended about half of the central and most spectacular portion of Tumbling glacier merely for exercise and pictures, made a belated decision at 1.30 in the afternoon to keep on and try for Mt. Helmet. After hours of exhausting work amidst snow-covered crevasses and breast-deep drifts in the saddle between Mt. Robson and the Helmet, the attempt was abandoned at 7.15 in the evening, when within 300 ft. of the summit.

In Fryatt Creek Valley

With nothing accomplished in the Mt. Robson sector except a general hardening of the muscles, it was with some misgiving as to the outcome of our climbing campaign that we started toward Jasper and the mountains of the Athabaska. On the way out from Berg Lake, Strumia decided to take one more picture of Mt. Robson and had the misfortune to catch a tricouni of his mountain boots in the stirrup as he dismounted. The horse bolted, dragging the prospective photographer through the woods, but was fortunately blocked in time to save the rider from the flying heels. Thereafter mountain shoes were safely packed away before each trip with the cayuses.

Mt. Christie, a 10,180 ft. peak easily seen from Jasper, was approached via the Athabaska River, Lick Creek and Fryatt Creek.

The first day, true to the precedent of the past week, was fraught with uncertainty, as Dave and Kenneth spent many hours combing the woods to locate our straying horses. Finally, after a long, dusty ride we reached Athabaska Falls and in the evening camped near the river bank. There, cut off from the world by the misty roar of the falls and with the moon shining back of the Fryatt spires, we managed to cast off some of Robson's depression and recapture our lost hopes.

From Athabaska Falls we kept to the left orographic shore of the river, through treacherous marginal high-waters, and then across a thickly wooded lowland flooded by beavers. Shortly after noon we arrived at the confluence of the Athabaska with Lick Creek, and followed the left orographic side of the latter until it became too undercut. We then took to the river flats, but these soon had to be abandoned on account of swift currents and high water. As a last resource, we plunged through a mean growth of thick jack-pine, where much cutting was done. In the end, having covered about eight miles from the Athabaska Falls, we had to retrace our steps a short way to camp on the gravel flats near the junction of Lick Creek with Fryatt Creek.

On July 11, with the aid of our old friends, Dave Moberly and Kenneth Allen, a high camp was established on the western slopes of Mt. Christie, about 2,000 ft. above the right orographic side of Fryatt Creek. Fred, the cook of the expedition, remained to watch the base camp.

Leaving the high camp at 10.40 A.M. we proceeded up a broad couloir of steep scree and snow leading over a secondary ridge into a large snow basin at the base of Mts. Christie and Brussels. We were now having the first warm weather of the season, and thundering avalanches from Mt. Fryatt continually reminded us of the condition of the upper slopes.

A broken couloir, piercing the first 500-ft. band of perpendicular cliffs, opened the way to the col between Christie and Brussels. Unmistakable traces of avalanches here forced us to extreme measures in an attempt to find a route on the rocks to the left of the couloir. However, near the top of the cliff smooth perpendicular rocks blocked us and having retraced our steps for a short stretch, we unroped, entered the couloir and as rapidly as possible followed up the steep snow and rock steps to the wide snow slopes below the col. From the col the route along the snowy southwest ridge was easy and at

5.10 P.M. we were on top. The panorama[1] was one of sweeping grandeur, but our eyes kept returning to the black perpendicular battlements of Mt. Brussels, which we expected to try later. We enjoyed the first triumph of the season and left the summit of Christie shortly after six. The snow was very soft, and grave apprehension was felt as to its condition in the couloir. Just as we reached the upper lip of the latter, Strumia shouted that an avalanche was coming. We were close enough to find it necessary to hold our hats, although we did not realize the full strength of the wind until sometime later. We regretted that we did not think of using our cinema camera in the first moments of the avalanche. It came down with a terrific roar, dislodging great rocks that crashed along the cliffs below. Several more avalanches on all sides decided our next move: we each selected a convenient rock to hide under, and waited for the sun to set behind Fryatt. At 9.15 the snow had hardened sufficiently and as no more avalanches had occurred for some time, we started down at a great clip, reaching the high camp by midnight.

Not being able to find an easier approach on the following day, we started for Brussels shortly after midnight on July 13th, over the route used for Christie. The upper snow basin was flooded with the misty light of a full moon, throwing the long sharp shadow of our peak against the towering buttresses of Mt. Fryatt. Sunrise came at 3.30 as we crossed the col between Brussels and Christie. The night had been warm, and the snow was unusually soft. On account of the conditions, we could not attempt an evil-looking snow-spattered fissure in the narrow southeast face of the main tower ahead, so we followed the foot of the ridge, until a snow finger of considerable steepness brought us to the crest of the ridge, a short distance from the base of the tower of Brussels on the east side. The snow was already too soft to think of planning the return by the same route before darkness.

We roped and attacked the buttress, which was made of excessively rotten rock. At 8 A.M. we arrived at a convenient stop-

[1] The following peaks were readily recognized: Robson, Edith Cavell, the Ramparts, Needle Peak, Hooker, Scott, Serenity, Oates, Clemenceau and all the Wood River group, Columbia, Alberta, The Twins, Catacombs, Lyell, Forbes, the Freshfield group, Brazeau, Warren, Maligne, Unwin, Charlton. The course of the Athabaska down to Jasper was particularly pleasing to follow with the eye!

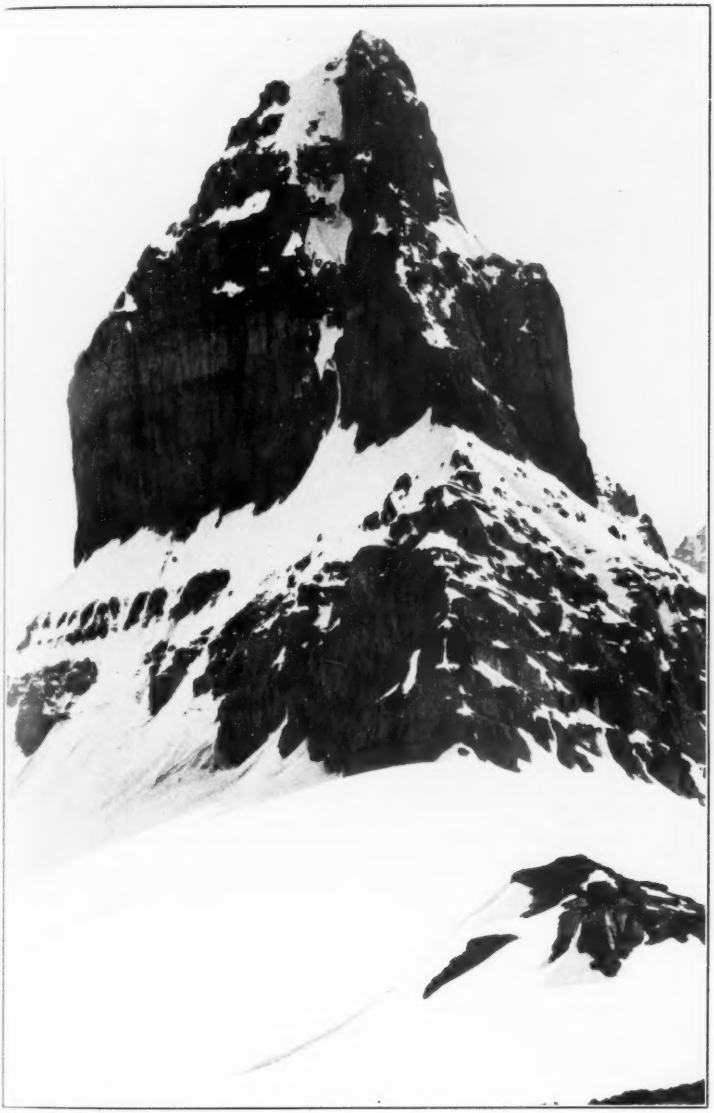


Photo. N. D. Waff

MT. BRUSSELS FROM THE NORTH EAST

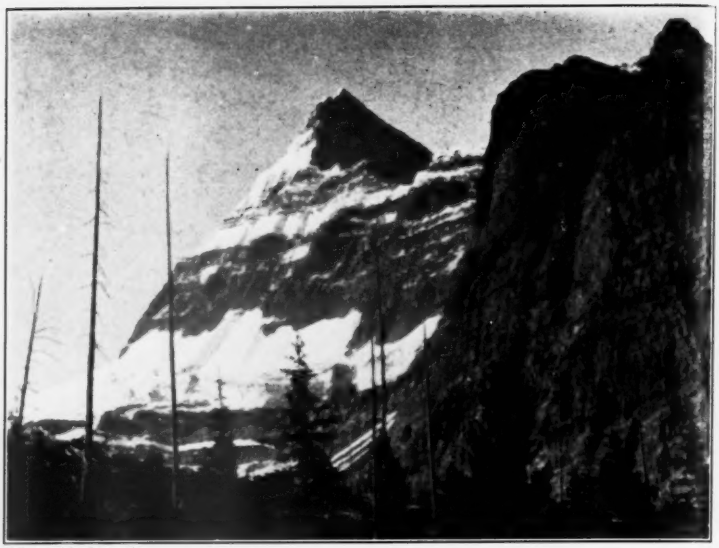


Photo. M. Strumia

MT. CHRISTIE (10,180 FT.) FROM FRYATT CREEK VALLEY

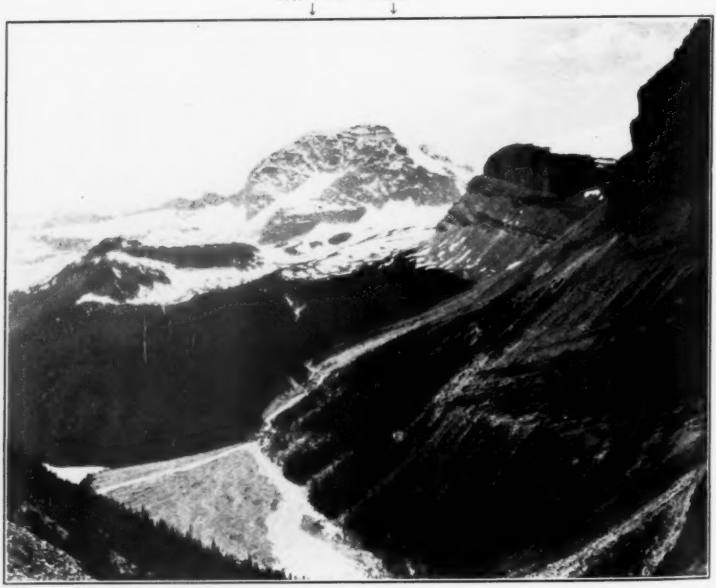


Photo. M. Strumia

MT. BELANGER (10,100 FT.) FROM HIGH CAMP IN FRYATT VALLEY

ping-point, convenient because we could go no farther. Here we were separated from the higher reaches of the main tower by a deep vertical fissure. There was no way around it and no way across. The route would not go. We were about 500 ft. below the summit. After some discussion it was decided to abandon further attack on Brussels. The sacrifice of our extensive future program for a single rock climb, which might require several days to work out, did not appear justified to the majority.

On the return we followed the sharp east ridge; with its reversed cornices, soft rocks and deep notches it gave us moments of anxiety and provided a very interesting descent. Shortly after noon we reached the col, and by half past 3 P.M. we were back at the high camp. In anticipation of a long day on Mt. Belanger we retired a few hours after reaching camp.

At 12.30 A.M. Strumia managed to awake the rest of us, which was not the least remarkable feat of a day of very unusual happenings. After a luscious breakfast of pork, beans and tomatoes, by candle light, we set forth for Belanger at 2.30. Starting in darkness was no real impediment as Mt. Christie had already offered an excellent opportunity to study the route to be followed.

Belanger, a beautiful 10,100-ft. peak, stands just north at the head of Fryatt Creek, and in order to reach the base from our high camp it was necessary to descend to Fryatt Creek. We did this rapidly, following a hypothetical game trail down a steep rocky torrent bed. Just at day-break we forded the main stream, and then indulged in the luxury of a small fire, to dry and thaw out. A long trip up an alluvial fan and across undulating snow-patched terraine brought us at 8.45 to the pass between Fryatt and Divergence Creeks, and at the base of the wide glacier which sweeps down the entire northern face of Belanger at a precarious angle. We had breakfast at the col, and studied the way up. The glacier shows unusually few crevasses and séracs for its great steepness, but to avoid a long siege of step-cutting in the sheet of glare ice, we followed the narrow snow trough between the ice and the rock on the right orographic side. Above the ice a long, fatiguing climb in deep soft snow brought us at noon to the first or northern peak. From this we discovered to our great dismay that the highest peak lay about half a mile south, and that the intervening ridge would offer all we could wish for an exciting day.

The ridge was in part formed of beautiful, hard conglomerate rock, broken into countless gendarmes, and in part covered with soft snow cornices of doubtful consistency. To the east it fell in a magnificent straight wall; to the west it drained into a wild circle of hanging glaciers and steep snow couloirs that were swept by avalanches all afternoon. We reached the highest peak at 3 P.M. with black clouds closing in around us and distant thunder.

The view from Belanger is spectacular. The ridge leading to Lapensee is broken by fantastic rock teeth from which hangs a shining curtain of ice. On the north side the massive peak of Fryatt is the undisputed monarch.

Before we were able to descend to the col, the storm reached us and produced strange electrical effects, which made our ice-axes hum, and our hair stand uncomfortably on end. At 7.30 we were on the way down from the col, in a losing race with time and the storm. We were thoroughly drenched when, glissading a rather treacherous curving short couloir, Lehman missed his footing and tumbled down over some rocks, stopping just in time to save a flight of some hundred feet. A painfully bruised hip and badly cut hand resulted. As it seemed improbable that we could all reach the base camp that night, Hainsworth started on at full speed, hoping to get there before dark and inform the rest of the party. The storm and the hot day had transformed the small streams into dangerous torrents, and best time could be made by wading indiscriminately down stream, avoiding only the main channels.

Soon after picking up the packs at the cache on Fryatt Creek we had to forego the luxury of wading, for the woods. In the meantime after a struggle through dense dripping jack-pine, rocks and windfalls, Hainsworth reached the site of the base camp, just at midnight, only to find a flooded gravel bar where the meadowland camp had stood. The land marks could not be disputed but the camp was not there. Obviously the river had washed away the little island, and the camp had been moved to higher ground, although such a conclusion is much harder to reach when one is fatigued and in complete darkness, standing on one of many gravel bars with water rushing on all sides. It was with considerable relief that he located the new camp by forceful yelling, and reached it after a precarious ford well past midnight.

Lehman and Strumia had met at the cache place up Fryatt Creek and at 10 P.M. Waffl joined them. They started out together

along the right orographic bank of the river, but the wet, thick jack-pine growth and the complete obscurity soon checked them. A lantern did not help matters, and Waffl and Strumia concluded to spend the night there. Lehman, however, by a peculiar twist of fate, preferred to try for the base camp, but after covering a short distance, he also stopped and rested for a few hours, starting on again at 4 in the morning; he reached the old camp place at 7. Finding no camp there, Lehman established one of his own and, much fatigued, went to sleep on a gravel bar.

Strumia, leaving Waffl and some packs, started the journey down Fryatt Creek at 5 A.M. and in crossing the swollen stream was swept by the current against a log jam and nearly carried under. He reached camp at 9, having been met by Dave Moberly and Kenneth Allen and informed of the change in its location. They kept on to assist Waffl with the packs, and at noon, Lehman having awakened from his slumber and in turn found camp, we were all united once more, none the worse for our hard thirty-six hours but full of good resolutions never to separate again.

After bathing in the stream which we had imprecated a few hours before for wetting us, we proceeded to merge several missed meals into one of gargantuan proportions. At 3 P.M. the same day we departed with the pack train and camped that night at the Athabaska falls. Next day after an early morning fishing interlude in a steady downpour, we moved camp up the Athabaska valley over the regular trail. The Sunwapta falls were reached on the evening of the 17th. Rain and bad weather continued.

In the Sunwapta Valley

The going next day was rough, there being practically no trail in many places along the Sunwapta. Repeated crossings of the river were very dangerous for both horses and men, and often we despaired of continuing on account of high waters. A camp was finally established on the evening of July 18 on the Sunwapta, about three and a half miles below Tangle Creek Junction at a point which we thought would be near the base of our mountain (the Unnamed peak, 10,700 ft. northwest, later called Piton Peak),[2] although the latter was hidden by high intervening ridges. If we had more

[2] Boundary Commission Map (22); also Climber's Guide, Palmer and Thorington, 1930, page 140.

carefully read Stutfield and Collie's account of the ascent of Diadem Peak,[3] we would have selected a better place.

At 1.07 A.M. on July 19 we started up the ridge back of camp over slippery frosted windfalls, the flickering lantern casting weird shadows through ghostly tree trunks and dwarfed pines. Fresh snow was found at 8,000 ft., and shortly after 5 A.M. we had the first glimpse of our mountain, beautiful but very far away. We were in fact on the foothill which terminates a long ridge extending from Mt. Diadem in a southeastern direction. By perseverance we finally came to the large broken glacial basin guarded by Mts. Diadem, Woolley, Unnamed (10,700 ft.) and Unnamed (10,900 ft.). We reached the glacier at 7 and following it in a large semicircle gained the northeast ridge of our mountain. By noon we had passed over a first peak about 10,300 ft., and were on the final ridge, within 300 ft. of the summit. Here the ridge became very aerial and we roped; shortly after this we met a most unexpected obstacle that all but stopped the ascent. The ridge was cut by a narrow deep notch, with the far side very high and overhanging. On the right side the mountain was protected by a precipitous ice couloir, and absolutely perpendicular walls; on the left, beyond a narrow rocky couloir, by a precipitous wall, plastered with snow and ice, overlooking a tremendous cliff. We descended in the couloir to our left, and attacked the icy rocks above it. The rotten snow-covered rock proved difficult. It was negotiated with the aid of three pitons and safety snap-rings, and provided a highly exciting climb for the leader and a cold one for the lower end of the rope. At 3.40 we reached the summit, standing almost in the center of a panorama of impressive grandeur: Mts. Diadem, Woolley, Alberta, King Edward, the Twins, Unnamed (10,900) and Stutfield. Mt. Alberta offered a sight of lofty isolation and tremendous power, with its ugly bare cliffs swept incessantly by snow avalanches.

On the return, the rope, employed over the difficult part of the wall, caught on the rocks above and had to be partly sacrificed. At 6.30 we unroped, and descending directly into the glacial basin immediately east of our peak, followed the main stream out. Goat-wool flags helped us to follow a game trail over a canyon and into the Sunwapta valley. We had unknowingly followed the route of Collie, Stutfield and Woolley. There ensued a trek of three long

[3] Stutfield and Collie, "Climbs and Explorations in the Canadian Rockies," 1903, p. 123. See also illustration facing p. 126.

Photo. M. Strumia

MTS. STUTFIELD, N. TWIN AND KING EDWARD, FROM UNNAMED, 10,700 FT.

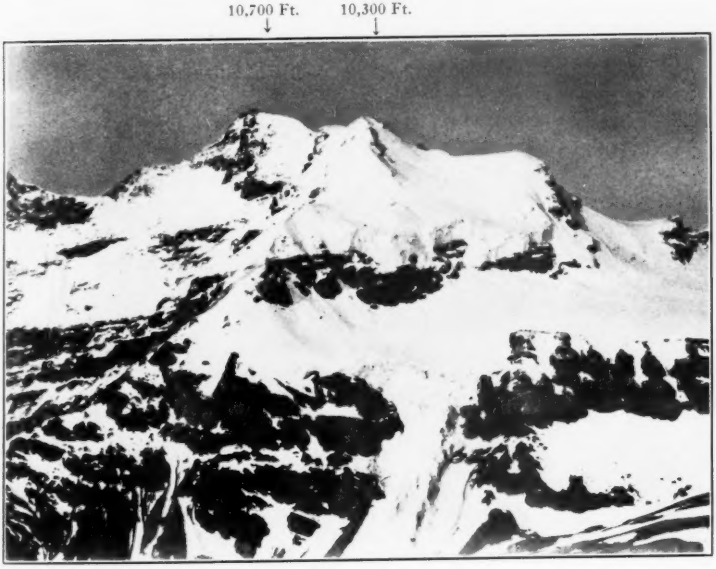


Photo. M. Strumia

UNNAMED, 10,700 FT.

The long ridge from lower left corner to Peak, 10,300 feet, was followed in the ascent.

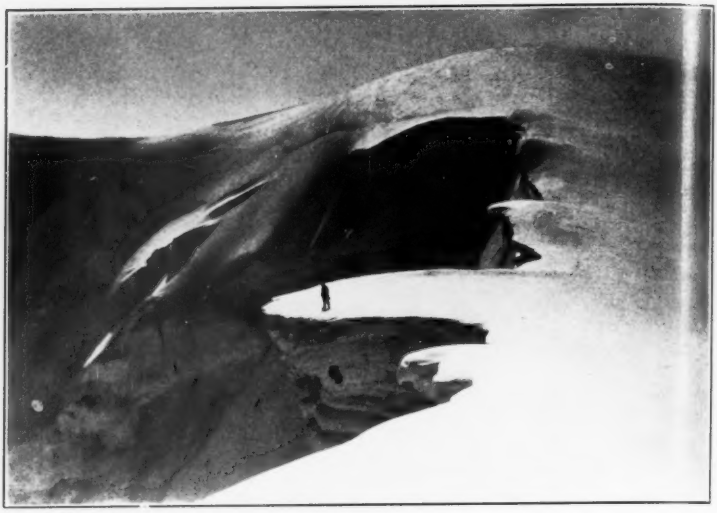


Photo. M. Strumia

UNNAMED, 11,200 FT.

Photo. M. Strumia

UNNAMED, 11,300 FT. AND 11,200 FT., FROM THE ATHABASKA GLACIER

miles down the Sunwapta, through muddy holes and countless channels to the accompaniment of the slosh-slosh of shoes full of water. We reached camp shortly after midnight, thus completing the most strenuous twenty-three hours we ever spent in climbing.

On the 20th of July we moved the camp over Wilcox pass to the foot of the Athabaska glacier, with the intent of ascending Unnamed northeast (11,300) and Unnamed southwest (11,200),[4] the last unclimbed peaks above 11,000 ft. in the Columbia group, for which the name of "Mt. Cirque" was proposed. We left camp shortly after 2 A.M. on July 21 with cold, perfectly clear weather, but were not fully awake until later, when we reached the upper part of the Athabaska glacier. Here, turning east, with the aid of crampons and ideal snow, we found an easy route leading to the col (*ca.* 10,200 ft.) between Unnamed (10,800 ft.) and Unnamed (11,200 ft.). The arête to the first summit (11,100 ft.) consisted of snow and shale, and at 8.10 A.M. we were on top. The second peak (11,200 ft.) was easily reached by following the upper margin of the cirque which was adorned with massive cornices, some as large as buttresses, and others molded in curling waves that seemed to be flying into space, and giving mute evidence of the tremendous adhesive forces between rocks and ice. We attained the third and highest summit is 9.40 by a thin aerial snow ridge. We enjoyed a long rest, and a rather smoky view of a flat panorama, while stretched out on the sunny rocks below the summit. It was still early in the day as we started to follow the ridge towards Mt. Athabaska, expecting to make a traverse and descend to camp via the glaciers of the northwest face of Athabaska.

Our plans however, were abruptly shattered. After plowing down the ridge leading to the col between Unnamed (11,300 ft.) and Mt. Athabaska, we found that a rock-swept cliff separated us from the saddle, 300 ft. below. The snow condition and the consequent danger of rock fall advised a return. What a task it was going up through the soft snow, which had been tolerable before only because it was a descent! After recrossing the three summits, snow conditions continued very bad. It was found much more convenient to slide in a sitting posture over the small open bergschrunds which in the morning we had passed by using crampons over snow bridges. In fact the sliding procedure seemed safer as

[4] Boundary Commission Map (22); also Climber's Guide, Palmer and Thorington, 1930, p. 140.

there was always sufficient momentum to carry one across the opening. We returned to camp by 5 P.M.

Maligne Lake

It was with considerable regret that we left this beautiful place next morning; there was one consolation: the seasonal forest fire smoke was just reaching the stage where it impairs photography. Sunwapta pass, Nigel pass, Jonas pass and shoulder, and finally Maligne pass brought us in three days to Maligne Lake. Bad weather accompanied us most of the time, and we arrived at Maligne Lake under one of the worst and most persistent cloudbursts we have encountered in the mountains. Hainsworth rode through it all without a hat, which he lost early in the adventure, and without raincoat, which he had carefully packed away in the bottom of his duffle bag. His multiple and continuous attempts to improvise a shelter contributed much of the day's humor.

We spent the night at the Maligne Lake Chalet, which brought back some pleasant thoughts of our 1928 campaign. In fact it was our desire to complete the exploration of the Mt. Maligne group, and possibly reach its highest summit. In the 1928 campaign[5] we had ascended two of the peaks of the group, Mt. Florence (*ca.* 9,750) and Mt. Hawley (*ca.* 9,850). However, the prospects of reaching the summit of Mt. Maligne seemed slight. We were due in Jasper in two days, and Maligne Lake was dreary under a low blanket of fog, slowly raising from the dripping evergreens. Nevertheless we awakened Joe Weiss at 2 on the morning of July 25, and with his usual cheerful solicitude Joe bundled us into his boat, covered us with blankets, and took care of things until we were landed at the upper end of the lake, on the spot of our 1928 base camp. Joe Weiss told us of a large party of climbers who had selected the same spot for their camp in 1929, whence they climbed Peak 4 of Mt. Maligne (*ca.* 10,200).[6] We later saw distinctly a large cairn on the peak. We left the shores of the lake in a drizzling rain at 5 A.M. and with clouds just above our heads. We followed our 1928 route to the large snow basin south of our peak. The clouds seemed to lift and we made rapid progress up a steep

[5] W. R. Hainsworth, *A. A. J.*, 1929; M. M. Strumia, *R. M. C. A. I.*, Sept.-Oct., 1929; *A. J.*, Nov., 1929; *C. A. J.*, 1929.

[6] M. M. Strumia, "Topographical Sketch of the Maligne Group," *A. J.*, p. 340, Nov., 1929.

rocky rib which led us to the ridge connecting Mt. Hawley with the Peak 1 of Mt. Maligne. Following the arête without difficulty, we reached Peak 1 (*ca.* 10,000) at 11 A.M. A snow storm greeted us there and accompanied us for the rest of the day. Peak 2 (*ca.* 10,200) was traversed about half an hour later, and shortly after noon we were standing on the summit of the highest Peak, No. 3 (*ca.* 10,400) in a violent storm. On the precipitous return from the col between Peak 2 and 3 we descended directly down a steep hard snow wall to the glacier southeast of Mt. Maligne, and from there reached our morning tracks, and returned to the lake.

This brought our little group to the end of the summer's trail together, feeling that in spite of the discouraging start our climbing trip had been successful. However, Mt. Robson remained in our thoughts and later the urge to return and conquer was too great for one of our party. Waffl perished there a few weeks later. Few can appeciate more than we who were with him on the trail but a short time before, the thoughtfulness and sterling qualities of this man. The mountains have taken one of their best friends.

Mountains and Mountaineering in Yezo, Japan

KENNETH P. KIRKWOOD

YEZO, better known as the Hokkaido, is the second largest island of Japan, being a projection of Japan Main Island and a bridge to Saghalien Peninsula. Only slightly smaller than Newfoundland, or somewhat larger than Ireland, it is the least known part of Japan, and in spite of its fine climate and magnificence of features it has received but little attention from travelers and writers other than Japanese. The following notes and observations were made during the course of a 1,450-mile journey through the island in July, 1930.

Of the mountains of Yezo, none equal those of the Japanese Alps in the main island. The highest range, that of Taisetsu-zan, does not exceed 8,000 ft. in height, and no peak except Mt. Asahidake, is covered with snow throughout the year. Nevertheless, because of their splendid panoramas, their volcanic characteristics and their relative neglect in the mountaineering records of Japan, they deserve a word of tribute and description.

A glance at a topographic map will show that the mountainous backbone of Japan proper is a continuation of the Saghalien system which forms the main cordilleras of Yezo and northern Honshu. Yezo itself is a triangular island having as a median the four chief ranges of Teshio and Yubari, and Kitami and Hidaka. The Kitami and Hidaka ranges, meeting at a focal point in the very center of the island, compose the highest group of mountains, the Taisetsu-zan group. In the Yezo system, as elsewhere in northern Japan, tertiary formations predominate, so that coal seams of economic importance and great extent, especially in the Yubari range, exist. Oil-fields occur in the younger tertiary, in northern Yezo and the Saghalien peninsula.

TAISETSU-ZAN GROUP

An expedition to Yezo for purposes of mountaineering would properly take one to the Taisetsu-zan group, or "Great Mountains of Snow." It consists of a cluster of volcanic mountains occupying an area of about twenty miles from east to west and fifteen miles from north to south. They attain an average height of 6,500 ft., though Mt. Asahidake, the highest peak is 7,513 ft.; Tokachidake is 6,815 ft., and there are others but little lower.

These mountains were early known to the primitive Ainu aborigines of the island; their various implements and relics have been found far up in the mountains. The first exploration took place about 1852, when the virgin wilderness at the base of the mountains was penetrated, and the splendor of the now-famous Sounkyo Canyon discovered. In 1874 a thorough exploration of the region was made by officials of the Hokkaido colonial government, under the leadership of an American, Dr. Benjamin Lyman, who was then head of the Government Geological Survey. Accompanied by American and Japanese geologists, he explored the upper parts of the Ishikari River and the Sounkyo gorge; and did some pioneering in the mountains in that region.

The Taisetsu-zan group is composed of a number of ancient and moribund, if not extinct, volcanoes, having all the geological characteristics of craters, crater lakes, steaming fumaroles and hot springs, and the botanical characteristics of beautiful Alpine flora. The movement of clouds over the mountains, the lingering snows even in midsummer, and the verdant plateaus suitable for camping spots, rich in Alpine flowers and insect life, give this region a surpassing beauty.

The mountains are reached from Asahigawa on the Hakodate main line, by branch line and motor car to Matsuyama Spa, and thence to Asahidake from the southwestern side. Or they may be reached from Asahigawa by branch line or motor to Kamikawa and thence by motorbus to Sounkyo Hot Springs, at the entrance to the Sounkyo Canyon; from the Hot Springs Inn there is a path leading up to Mt. Kurodake at the southeast corner of the range. These two routes meet at the top of the massif. The best time for climbing is from the beginning of July until the end of September; although the stone sheds used for climbers are closed from the beginning of September. The ascent of Mt. Asahidake can be made in three hours from the foot; and offers no serious difficulty if the main foot-path is followed.[1]

The second highest mountain in Hokkaido is Mt. Tokachi, or Tokachidake, which rises to a height of 6,815 ft. This is an active volcano, situated on the boundary of Ishikari and Tokachi provinces,

[1] No guidebook or descriptions of the Taisetsu-zan group are available in English. For those who read Japanese, however, the best book is "Taisetsu-zan; a Guide for Climbing," by Hideo Koizumi (Yen 2.00). This is a detailed scientific study, amply illustrated with photographs and charts, of the whole region, and deserves attention.

to the southwest of Mt. Asahidake. There is no vegetation on the upper part and only rugged rocks tower into the blue sky, while from the depths of the crater continuous white smoke rises. The lower slopes are profusely rich in Alpine plants.

The principal starting points for climbing are the villages of Furano, on the Furano branch line from Asahigawa, and Takikawa. From Furano station to the foot of the mountain is a tramp of about 5 hours. A horse-drawn carriage (basha) may be hired for this trip, but no motor transportation is available. From the foot to the summit is a two hours' climb; so that if the whole distance from Furano Station is covered on foot, it would be a difficult one-day's journey. In the middle part of the mountain, however, there is a small hot spring and inn, the Fukiage Onsen, where a bed without meals may be had for about 70 sen or a daily rate of Yen 2.00 is charged. The mountain is formally opened for climbing on June 1st, and continues open until the beginning of October.

Another mountain in the central region of Yezo is Mt. Asahibetsu or Asahibetsudake (5,660 ft.). This is not very frequently climbed, although there are many places of interest here for alpinists. There is no shed or refuge on the way, and unless the descent is made the same day, it is necessary to carry bedding and supplies for the night. Climbers usually get off at Yamata station, on the Nemuro line just south of Furano junction; and from the station to the summit is a distance of about twelve and one-half miles. The climbing season is from the middle of July to the end of August. Mt. Asahibetsu is the highest peak in the Yubari range, and overlooks to the southward the extensive series of hills and valleys in which the most valuable coal-fields in Japan are found.

Southwestern Group

Perhaps the most appealing of all the mountains in Yezo is the superb Mt. Shiribeshi, commonly known as Mt. Fuji of Yezo.[3] This is a symmetrically shaped conical mountain, an extinct volcano 6,211 ft. in height, standing solitary and proudly in Shiribeshi province in southwestern Hokkaido. An unforgettable sight is the view of this superb mountain, almost a duplicate of Fujiyama, as

[3] Both Terry's "Guide to the Japanese Empire" and the Imperial Japanese Government Railway's "Official Guide to Northeastern Japan" make the error of stating Mt. Shiribeshi or Yezo Fuji to be the highest peak in Hokkaido. There are, in fact, about eight peaks higher than this mountain. This obvious mis-statement even in the revised editions, is inexplicable.

seen from Mt. Usu on Volcano Bay or across Lake Doya. Kutchan, famous for its iron ores, is the usual starting point, but Hirafu Station is nearer, being only about two miles from the mountaineering bureau at the foot of the mountain, whence the summit is reached in about three and a half hours, the distance being a little over five miles. A superb experience is to climb during the night and witness the Alpine glow just before sunrise; this beauty is indescribable. At the summit there is a crater 2,600 ft. in diameter and 1,000 ft. deep. A magnificent view of the mountains, the lakes, and the ribbon-like rivers of nearly half of Hokkaido may be had on a clear day; the prospect is practically unobstructed on all sides, as Mt. Shiribeshi stands solitary in an extensive valley.

Mt. Usu, south of Shiribeshi, near Lake Doya, is an easy and popular climb only 2,382 ft. in height. The azure sea to the south, the exquisite circular, island-studded Lake Doya at the foot of the northern slope, and the imposing form of Fuji of Yezo in the northern distance form a sight not to be forgotten. Just below the summit of Mt. Usu lie some small craters, which send out jets of steam like a simmering tea-kettle. One of the earliest travelers to visit this mountain was Miss Isabella L. Bird, who in 1878 whilst visiting the British Ambassador, Sir Harry Parkes, explored some little known parts of Japan and Hokkaido. In the course of a horseback tour of this region, she accidentally came across this mountain; "the Ainos said it was 'a god' but did not know its name, nor did the Japanese who were living under its shadow." She describes Mt. Usu thus:

"There, confronting me, within a distance of two miles, was this grand, splintered, vermilion-crested thing, with a far nobler aspect than that of 'the' volcano (Komagadake), with a curtain range in front, deeply scored, and slashed with ravines and abysses whose purple gloom was unlightened even by the noon-day sun. One of the peaks was emitting black smoke from a deep crater; another, steam and white smoke from various rents and fissures in its side; vermilion peaks, smoke and steam, all rising into a sky of brilliant blue, and the atmosphere was so clear that I saw everything that was going on there quite distinctly, especially when I attained an altitude exceeding that of the curtain range. At some distance from it in the interior rises a great dome-like mountain, Shiribetsu-san and the whole view is grand."[3]

[3] "Unbeaten Tracks in Japan," 1881. Vol. II, p. 131.

Southeastern Group

Another mountain, Mt. Meakan or Meakandake (5,200 ft.) is, because of its greater distance eastward than the mountains so far mentoined, less well-known to climbers. It is, however, almost as noted as Asahidake, Komagatake and Usudake, because of its commanding position and superb outline. The locality has been recommended for a national park; and as Yezo becomes better known and transportation facilities are extended, it will certainly become a popular center for climbers and other travelers.

The foot of the mountain is most easily reached from Kitami-Aioi station, which is on the line now being completed connecting with the Abashiri line at Bihoro. Another approach is from Yubetsu station, on the private line of the Yubetsu Mining Company running as a northwesterly spur from Kushiro. From these stations up to Rubeshibi is about sixteen miles; and to the base of the mountain is about four miles more. The ascent to the summit is some nine miles from the foot, so more than one day is needed to make the climb and return. The great brown bear, the "grizzly" of America, lurks in the forests of this region, but unless hungry, frightened or attacked, is usually ready to make a retreat if encountered. August is the best season for climbing Mt. Meakan, though July offers clear days and good visibility.

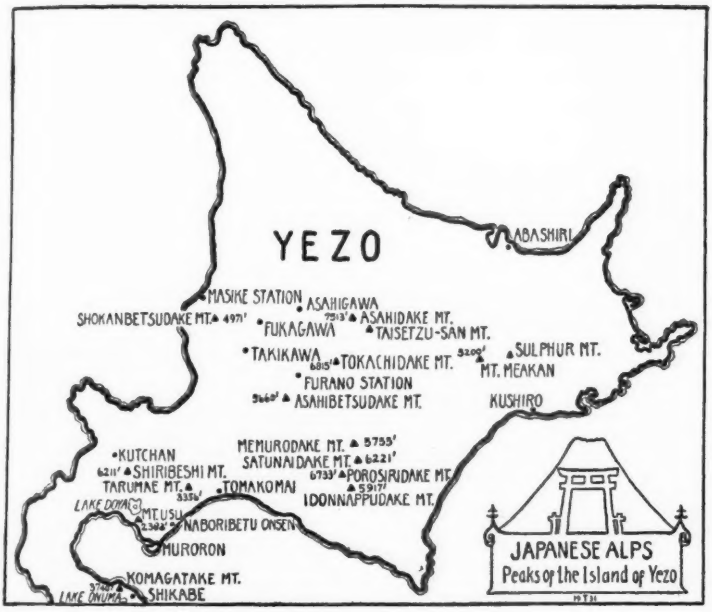
Western Group

If one is traveling in the western part of Yezo, there is a noted mountain due west of Asahigawa, toward the Japan Sea, Shokanbetsudake (4,971 ft.), so difficult for climbing that it is rarely ascended. It is an inactive volcano, the summit consisting of lava piled high upon lava, and rising in two peaks. Here are found many points of geological as well as scenic interest, and the view of the Ishikari plain stretching southward, of the Japan Sea coastline to the west, and of the upper basin of the Ishikari River eastward toward Fukagawa, offers a magnificent compensation for the rigors of the ascent. From Fukagawa, the branch line to Rumoi is taken to Masike station. If one remains overnight here in Masike village, the summit is reached next morning, and the return is completed the same evening.

Active Volcanoes

Practically all of the mountains so far described are extinct or inactive volcanoes, although in Japan almost any volcanic mountain may become resuscitated and commence a new period of activity. The notes that follow deal with two of the better-known and more recently active volcanoes Mt. Tarumae, and Mt. Komagadake.

The most famous of these, from a mountaineering point of view, is undoubtedly Mt. Tarumae (3,356 ft.). This is a double



volcano located in the southern part of the valley of Lake Shikotsu, near Tomakomai on the Muroran northern line. It is notable among geologists as the example of what is known as the Tarumae type of double volcano. When the last great eruption took place in 1909, new lava was formed in a crater about 500 ft. high on the top of the old lava and on the rim of the old crater, which was filled up.

If one gets off at Tomakomai, the location of the famous Oji Paper Mills, and takes the company's branch line to Shikotsu Lake,

the approach may be made from Choshiguchi in Chitosegawa. The distance from Tomakomai is about fifteen miles and may be covered in just under two hours. Several hotels are to be found at the lake side. About two miles by boat across the lake, Morappu may be reached, and from here the ascent is made. From the foot to the top is a distance of about five miles, which can usually be covered in about three hours.

In 1878, Miss Bird, the English traveler, described Mt. Tarumae as "a calm-looking cone, whose skirts are draped by tens of thousands of dead trees. So calm and grey had it looked for many a year that people supposed that it had passed into endless rest, when quite lately, on a sultry day, it blew off its cap and covered the whole country for many a mile with cinders and ashes, burning up the forest on its sides, adding a new covering to the Tomakomai roofs, and depositing fine ash as far as Cape Erimo, fifty miles off."[4]

Those whose early perambulations in Yezo take them to the exquisite beauty spot of Onuma Lake, destined some day to be one of the most popular national parks of the island, will gaze long at the low-lying jagged-peaked form of Mt. Komagatake (3,740 ft.), bare and cinder-covered on its upper slopes. This volcano borders the northern shore of the larger Onuma Lake, whose heavily foliaged banks discredit the reflection that the upper summit hides a very active and dangerous volcano. The view of the mountain from Volcano Bay is also impressive and has intrigued every traveler since Miss Bird first wrote her adventures and even before. The mountain is reached either from Onuma Park station lake, or from the next stop north, at Komagatake station, which is slightly nearer the base of the mountain but much less attractive.

The top of Komagatake offers a full reward. The summit consists of more than ten craters, most of them active and full of menace, with white smoke continually rising. Although Komagatake is frequently swathed in low-hanging clouds, the views on a clear day are unforgettable. Komagatake erupted violently on June 17th, 1929, and half buried the popular little resort of Shikabe under nearly a foot of cinders and pumice, some pieces as large as watermelons. Two persons were killed and several injured. The vicinity of this hot-spring is now arid, desolate and scorched, and offers a striking and woeful contrast to the rich greenery and verdure of the other side of the mountain, which escaped the effects of the

[4] "Unbeaten Tracks in Japan," 1881, Vol. II.

eruption. Little does the present aspect of Komagatake, somnolent and peaceful as it stands reflected in the tranquil lake, suggest its awful outbreak less than a twelve-month ago. Yet the local residents tell of the terrible day when the mountain began suddenly to belch black smoke, which lasted for sixteen hours, to thunder and vomit and flare, and to spew out masses of dust, cinders and enormous rocks, which fell twenty miles away.

Southern Group

There is a great stretch of mountains, with many fine peaks of considerable height, in the south central part of Yezo; and this region, owing to lack of railway connections, remains largely unexplored and entirely unknown to foreign travelers and even to most Japanese mountaineers. The peaks of Memurodake (5,755 ft.), of Porosiridake (6,733 ft.), of Satunaidake (6,221 ft.) and Idonnappudake (5,719 ft.), to mention only a few of the more prominent, will someday become accessible and popular, especially with those who have no time to reach the central mountain groups further north.

Yezo is full of invitation to the explorer and mountaineer, and the appeal of the unknown will be heard before long by the more intrepid and venturesome of those whose feet draw them to high places.

The Ascent of Mount Owen

FRITIOF M. FRYXELL

ONE naturally associates Mt. Owen with the adjacent Grand Teton for their summits are scarcely half a mile apart. Historically, also, these two highest of the Teton peaks are no less intimately related. The altitude of Mt. Owen (12,910 ft.) was triangulated in 1925 by William O. Owen, veteran Wyoming surveyor, who, it will be recalled, was organizer and moving spirit of the successful attack on the Grand Teton (13,747 ft.) in 1898, sponsored by the Rocky Mountain Club. These considerations among others suggested for the mountain its present name, adopted by the Geographic Board on October 5, 1927.

From the Idaho side, Mt. Owen has the appearance of a huge shoulder thrust out from the north flanks of the Grand Teton, but from Jackson Hole, to the east, it is seen to much better advantage. A splendid east-facing cirque separates the two peaks and contains a glacier which, though shrunk to scarce a mile in length, is still tenaciously gnawing at the crystalline heart of the range. Geologically the time is not remote when the cirque head-wall will be broken through and the complete separation of the two peaks effected.

Mt. Owen is obscured by Tee-win-ot from points directly to the east. From the southeast it is seen as a sheer wall nearly half a mile high rising from behind the glacier—a huge vertical slab, broadly triangular in form, but lacking in perspective and depth.

Most impressive of all is the view from the northeast, up Glacier Canyon from near the upper shores of Jenny Lake. Here Mt. Owen soars skyward in a single tremendous sweep—more than five thousand feet of bare gneiss, bristling with pinnacles and spires, and as yet invaded by man only in the upper thousand feet. From base to summit, snowfields of virgin whiteness and soft contours, contrast strongly with the jagged grey rocks—snowfields caught on shelves and crags and linked together by a lacy network of the same lodged in crevices. The eye, willing but unable to comprehend, travels from the foot to the apex a mile apart horizontally as they are vertically; then, reverently, it moves to the left to rest on Tee-win-ot and the Grand Teton; no less colossal in proportions

and as superb in figure, giants of the earth which may be worshipped but never understood.

The story of Mt. Owen must be told in terms of several exploratory skirmishes which led to the ascent. The first try for the top known to me is that made by Robert Spahr, Paul Petzoldt and myself on August 1, 1927, when we climbed from the moraine of the glacier to the saddle between East Prong and Tee-win-ot, thence westward straddling the arête to the summit of East Prong. The difficult traverse around the north of the prong was frustrated by inclement weather. This excursion demonstrated that the route up Mt. Owen must go from the glacier up the cleft between East Prong and the main peak. On August 9 Phil Smith and Ben Lengee, who quite unknown to us were also aspiring to the summit of the mountain, ascended by this cleft to the base of a rock ledge on the east side at 11,500 ft. The same week a third party, under A. R. Ellingwood, also explored the east slopes of Mt. Owen.

The following winter William O. Owen corresponded with Smith, William Gilman and myself, urging a serious attempt at his mountain. Urging was not necessary. The evening of July 28, 1928, found the four of us at the familiar old camp on Amphitheater Lake (9,500 ft.). At 5.30 the following morning we set out, leaving our old comrade perched on a nearby point from which he could command the best possible view of Mt. Owen, and photograph to his heart's content. We crossed the glacier and began climbing directly below the chimney separating East Prong from the peak. Half-way to the col, from a broad snow-covered bench, we gained entrance to the steep, narrow chimney. Here we roped up and by the time we looked over the col at flat-topped Mt. Moran six miles to the north, even Smith (who revels in snow) had had his fill of step-cutting.

Making a right-angled turn west we continued up the east side of the main peak. There was easy climbing to the base of a broad ledge, perhaps 200 ft. high, at 11,500 ft. Gilman's pioneering on the wet, icy ledge was nicely executed. Topping the ledge, we cut diagonally across the extensive upper snowfield to the exposure of bare rock near the middle and then bore left for the base of the summit ridge. The snowfield steepened so much toward the top that we could touch the surface with outstretched arm. This crossing, which necessitated continuous step-cutting, took much precious time.

Twice we saw snowslides to the west, near the far edge of the snowfield.

By means of a couple of chimneys we reached the crest of the summit ridge, crossed over, and worked westward up the smooth, steeply-pitching slabs of its south side. At the west end of the ridge we attained what appeared to be the extreme summit knob with a granite face which was nearly vertical at the base but rounded off above into a smooth, polished, convex surface remarkably barren of projections and fissures and suggesting in miniature the Half-Dome of Yosemite. After a hasty examination we thought it best to try the east face. About fifteen feet up was the only protuberance, a couple of inches high, and Smith succeeded in looping the rope over it; while this was held taut, Gilman climbed up, got his foot on the projection, and with such impetus as he could summon, started up the cliff. He reached a point some fifteen feet higher, but then had to desist through exhaustion. It was a noble effort, deserving the success which, we learned a year later, it so nearly attained.

Since it was past 3 o'clock and the sky had become threatening, we ventured nothing more, but (after leaving a cairn and record at the base of the cliff) started down. We barely reached Amphitheater Lake by dark. Starting on at once, Gilman soon became indisposed and, with Smith, camped by the trail till morning. Owen and I gained Jenny Lake shortly after midnight.

The Grand Teton National Park became a reality on February 26, 1929, and the following summer all three of us were back as members of the first park staff. No opportunity to challenge Mt. Owen presented itself that summer, though recollection of our experience in 1928 was a perpetual thorn in the flesh. Nevertheless important developments did take place. Kenneth A. Henderson and Robert L. M. Underhill, following their splendid conquest of the Grand Teton from the east, became interested in Mt. Owen and agreed to return in 1930 to help finish the job begun in 1928. Also, Smith and I had several occasions to explore the range north of Mt. Owen and to examine the latter with glasses. The route of 1928 and details of the summit were clearly visible, and several significant facts were established: that the stubborn granite knob *was* the extreme summit; that it was if anything lower than we had supposed, Gilman having gotten up the really bad part of the east face; and that a snow-covered inclined ledge extended from below

Photo. © H. C. Crandall

TEEWINOT (LEFT), GRAND TETON (CENTER), MT. OWEN (RIGHT), FROM NORTH EAST

the base of the knob around the north face practically to the summit. If the east face could be negotiated the problem was solved; if not, the north ledge offered a promising alternative.

On July 5, 1930, Smith and I climbed Nez Percé, which left Mt. Owen the only unscaled major front-peak in the range. Henderson and Underhill arrived a week later and, after hiring a cook and securing a week's provisions, packed up to Amphitheater Lake. Superintendent Sam T. Woodring assigned the ascent of Mt. Owen to Smith and myself as our day's job for the 16th. Gilman, who had been visiting us, unfortunately had been called home to Denver a few days earlier. The evening of the 15th Smith and I hiked up to the base camp and found our new partners comfortably located.

Cook was ready to serve at 4 A.M. and Smith and I shared a breakfast qualitatively and quantitatively the best in our climbing experience. Pack horses, cook, tents, alarm watches—this was mountaineering *de luxe*, a novelty and rare treat for us. A beautiful morning, everything in our favor. We were off at 5, and began climbing from the glacier at 6.15. Not only was there much less snow than in 1928 but it was soft and we could kick steps, thus making rapid progress. Our route repeated that of the earlier trip except that, distrustful of the chimney, we kept mainly on the slabs to the left. The ledge at 11,500 ft. was climbed farther to the right, where it was nicely broken. Again we crossed the upper snowfield by way of the rock exposure, now much larger. We did not rope up till we crossed over the summit ridge. Underhill, who had groaned and murmured soft profanities over the tedious early hours, gradually became more and more deeply interested.

At 9.30 we reached the base of the granite knob; four hours earlier than in 1928, the better part of the day still ahead, and all of us in fresh condition! Unburdening ourselves of packs, cameras, ropes and axes, we composed ourselves for lunch—that is, all except Underhill, whose transformation was now complete and who, with blood in his eye, was already off over the ridge. Soon a triumphant yell told us that Mt. Owen was as good as conquered, but we made no move till the serious business in hand was finished. Then taking the ropes we crossed over to where he was examining a narrow ice-filled chimney which, about thirty feet east of the granite knob, descended the north side of the ridge. After some discussion we let Underhill down the chimney on the rope to investigate around the corner to the left. The report was good, the *rappel* rope was

fixed, and Henderson, Underhill, Smith and I descended in order. At the bottom, perhaps thirty-five feet down, a twenty-foot downward traverse west brought us to the lower end of the north ledge, noted the summer before from the peaks to the north.

Stormy conditions permitted no delay, and I recall but hazily the great north precipices and snowfields below us. When I reached the ledge, which in reality was a slab extending up to the ridge, Henderson was already leading off. It was perhaps twenty feet wide at the bottom, steep and wet. Above was the overhanging north wall of the granite knob. The inner angle of the slab was encumbered with loose rock and ice. It was about one hundred fifty feet long; and thirty feet from the top, where it widened, we edged right into a vertical crevice. I was last, and when I wriggled out of the top of the fissure I found my three partners perched, like gargoyles, on an exposed knife-edge of rock, shaking with cold and shouting to make themselves heard above the roar of the wind. The ridge projected from the overhanging north face of the knob twenty feet below the top. In wind and sleet, scaling the overhang presented a serious problem, but Henderson abandoned it only when the rest of us, letting the wind drown his arguments, started down the west side of the ridge.

Events now followed swiftly and with bewildering unexpectedness. Twenty feet down we found a spacious ledge which led around to the west side of the peak. We had now half encircled the granite knob in search of a vulnerable point, and here we found it: the middle of the west side of the knob was breached vertically clear to the top. In a trice we had stormed the knob by this crevice and were on its summit. It was not yet noon—11.15, to be exact.

The summit of Mt. Owen is unique among the Teton peaks, shaped by exfoliation of the granite to a rounded, knobby top having sheer or overhanging sides that are apparently unbroken on all but the breached west face. Langford's description of the Grand Teton, so curiously inapplicable to that mountain, fits Mt. Owen well: "Exposure to the winds kept it free from snow and ice, and its bald, denuded head was worn smooth by the elemental warfare waged around it."

There were few boulders on the summit so we had to content ourselves with a tiny carn. The east face did not look so bad from above. Some thirty-five feet down was the spot where Gilman had been forced back. From rim to base the east face dropped

sixty feet, for the 120-foot *rappel* rope, doubled and passed through a sling attached to a large boulder, just served. In short order the descent to the ridge below was accomplished, thus completing our circuit of the north half of the knob.

The hazards of the east face, in part psychological, by this time appeared much less formidable, and Underhill's suggestion that we now "do the mountain up right while at it" was met with enthusiasm, so we pulled down the *rappel* rope, and donned tennis shoes. While I anchored from below, Underhill went up the cliff and was soon back at the sling. He now anchored me from above and I followed suit. It was remarkably easy, for rubber soles held well. Henderson and Smith followed in similar style. Lingering on top the second visit only long enough to add a note to the record, we again descended on the *rappel*.

At twelve-thirty we started down, roping together (since no one fancied carrying the rope) and remaining so to the lower edge of the big snowfield. The ledge was descended at the nearest point by a double *rappel*. Descent from the col was made to the accompaniment of caustic comments in the rear relative to the route which Henderson and I selected in avoiding the chimney. At four-fifteen we reached Teton glacier, the parting of the ways, as Henderson and Underhill returned to their camp and Smith and I cut down the canyon direct to Jenny Lake, which we reached at six-thirty.

The press publicity accorded the ascent of Mt. Owen was justified only by the fact that in a sense it closed an epoch in Teton mountaineering—the pioneering stage, begun at least eighty-seven years before.[1] The climb itself proved good, though more difficult ones have been made in the range. However I doubt that any Teton ascent has contained more of variety and interest. Further, Mt. Owen is unusual in necessitating much snow-work in contrast to the other Teton peaks which involve little or none. The "corkscrew route" to the summit of the granite knob is quite as unusual and distinctive as the famous "cooning place" of the Grand Teton, and is perhaps more hazardous than the shorter route up the east face of the knob. Future climbing parties using Amphitheater Lake as their base of operations will probably divide their attention between the two highest Teton peaks, both so readily accessible from this

[1] Michaud's attempted ascent of the Grand Teton in 1843 is the earliest recorded effort to scale a Teton peak, and is taken as the beginning of what may be termed "the pioneering stage" in Teton mountaineering. There may, of course, have been earlier attempts than his.

point. The route from Glacier Canyon up the north or northeast side of Mt. Owen, intersecting our route on or near the summit ridge, is also quite feasible, though it will involve starting from a base camp about 2,000 ft. lower than Amphitheater Lake. Little is known of the west slope below the granite knob, but scrutiny from other peaks to the north and south has convinced us that this approach may be the most formidable of all. The upper of the snow-bands on the southeast face, and the southwest arête deserve further consideration. It will always be a matter of regret to us that on the occasion of the ascent Gilman was prevented from accompanying us, as he merited so richly the privilege of taking part in the conquest of Mt. Owen.

The First American Ascent of Mont Blanc

THE HOWARD MANUSCRIPTS

J. Monroe Thorington

DR. JEREMIAH VAN RENSSELAER and his friend, William Howard, received their degrees in medicine in 1817 from the University of New York and the University of Maryland, respectively, and left soon afterward to visit the medical centers of England and the Continent, following this with the Grand Tour.

In the spring of 1819 they journeyed to Italy and ascended both Aetna and Vesuvius. Returning over the Simplon in the early part of July they reached Geneva and Chamonix, where they made various excursions to the glaciers and conversed with old Dr. Paccard and the local guides, among whom was Jacques Balmat—styled by Howard "The Columbus of Mont Blanc."

As a result their curiosity was aroused and, on July 12, 1819, they stood upon the summit of the Monarch of the Alps. To be sure, they required twelve hours on the previous day to reach the Grands Mulets from Chamonix, and passed an uncomfortable night in a tent constructed of sheets. On the day of their ascent they reached the Grand Plateau with difficulty, and in mounting the "Ancien Passage" it was feared that Howard would be compelled to return. But at half-past twelve they were on the summit and remained an hour and a half, the weather being fine but very cold. They spent a second night at the Grands Mulets, and reached Chamonix with sunburned faces and eyes so inflamed that they had to ride to Geneva in a darkened carriage. But they were young then, and Mont Blanc was still a great adventure.

This was the first American ascent of the great white mountain, and Howard's letters from Geneva were printed at Philadelphia in the *Analectic Magazine*[1] for May, 1820, as "A Visit to the Summit of Mont Blanc, in a letter from an American Traveller to his Friends in the United States." When Howard returned to Baltimore the revised account was published, in April, 1821, in a little book entitled, "A Narrative of a Journey to the Summit of Mont Blanc, made in July, 1819."[2]

[1] New series, vol. i, 375-400.

[2] Baltimore (Fielding Lucas, Jr.), 12 mo., pp. 49, one plate; reprinted in *A. J.*, xxxiii, 13; republished by Lucas Brothers, 1856.

Van Rensselaer had not let his pen rest idly. While at Antwerp, in September he corresponded[3] with the editor of the *Vaderlandsile Letteroeffeningen* in regard to the ascent, but nothing appears to have come of it. While still at Geneva he had written to Professor Silliman in New Haven, and in November, 1820, the *American Journal of Sciences and Arts*[4] contained a narrative entitled "Account of a Journey to the Summit of Mont Blanc."

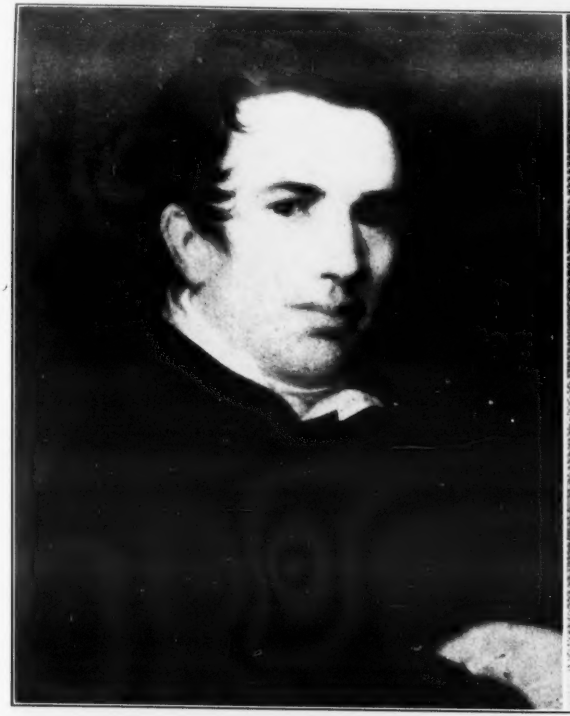
The ascent by Howard and Van Rensselaer, if one includes that of Dr. Paccard and excludes those by Chamonix peasants, was the eighth; and the narratives which they wrote were the first printed descriptions in America of the ascent of an alpine snow-mountain. These accounts have taken their place in mountaineering literature, and received due attention from Mathews,[5] Montagnier[6] and other students of alpine history. The present paper deals with the future activities of these men, whose biographies hitherto have been neglected; and with manuscript material, recently brought to light, concerning their ascent of Mont Blanc.

Jeremiah Van Rensselaer was born at Fort Crailo, the old family mansion in Greenbush, New York, on August 4, 1793, and graduated from Yale with the class of 1813, receiving his M. D. from the University of New York four years later. After his return from the European tour he began practice in New York City, following a period of apprenticeship in the office of his uncle, Archibald Bruce, then professor of materia medica and mineralogy, where his many-sided ability soon became evident. He was for many years secretary of the New York Lyceum of Natural History, before which he presented his "Essay on Salt," and in 1825 published a "Treatise on Geology," which was well received. During the period 1820-41 he contributed eight papers to the *American Journal of Sciences and Arts*, covering a wide range of scientific subjects. He became associate lecturer on geology to the Athenaeum (the name of William Howard appears in the list of patrons), and a director of the American Academy of Fine Arts; while among the numerous honors conferred upon him were membership in the Royal Society of Edinburg and the Royal Academy of Sciences at Naples.

[3] Letter in author's collection.

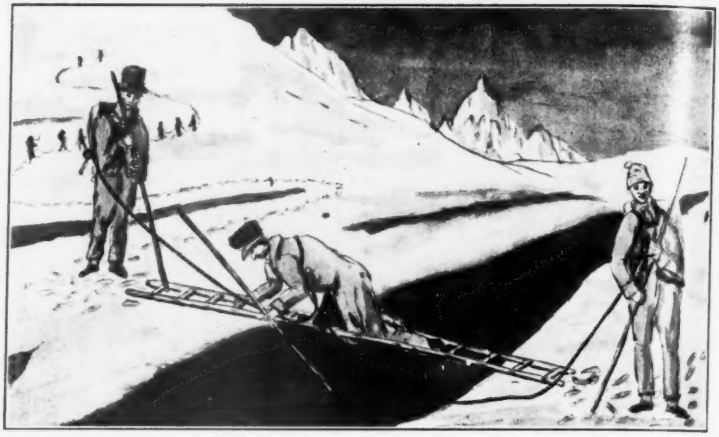
[4] Vol. ii, 1-11; translated in *Bibliothèque Britannique, Sc. et Arts*, Genève, 1820, xiv, 219-34.

[5] *Annals of Mont Blanc*, 121; *A. J.*, xxv, 608 ff.; Dübi, *Paccard wider Balmat*, 271.



DR. WILLIAM HOWARD (1793-1834)
From a portrait about 1820, artist unknown.

DR. JEREMIAH VAN RENSSELAER (1793-1871)
From a portrait by Terry of Rome, about 1841.



"PASSING A CREVICE IN THE GLACIER OF BOISSONS"
Wash drawing in Howard's manuscript journal; differs from frontispiece of Baltimore imprint.

"MONT BLANC, FROM THE LAC DE CHEDE, DISTANT 9 MILES"
Wash drawing by Howard; frontispiece of his manuscript journal.

In 1840 he visited Rome and remained in Europe for three years, resuming practice in 1843. In 1851, after more than thirty years of medical activity, he retired and, with the exception of periods spent in European travel, lived at Greenbush until his death[6] on February 7, 1871. Van Rensselaer was married twice: to Charlotte Foster, of Boston, and to Anne Ferrand Waddington, of New York, who survived him by more than twenty years.

Two portraits have come down to us: one, a miniature[7] by an unknown artist, painted about the time of Van Rensselaer's return from the first European journey; the second,[8] done by Terry, of Rome, apparently in the summer of 1841.

William Howard was born in 1793, the fourth son of Col. John Eager Howard (1752-1827), who fought at Germantown, Monmouth and the Cowpens, became Governor of Maryland (1788-91), was elected to the Senate, and became a candidate for Vice-President in 1816.

William's birthplace was the family homestead, Belvedere, where in 1826 the possibility of the Baltimore and Ohio Railroad was first discussed—a matter which was to influence the future course of his life. Family tradition relates that Dr. Howard entered upon the practice of medicine in Baltimore, in 1820, after returning from his tour with Dr. Van Rensselaer, but had the misfortune to lose his first patient, a friend whose life he strove in vain to save. He thereupon withdrew from medicine, although he continued as adjunct professor of anatomy in the medical school of the University of Maryland, his alma mater, where he worked under Dr. J. B. Davidge during the winter 1820-21.

His interest in mathematics now became predominant, and he resigned to enter the service of the U. S. Government engineers. He became actively concerned in the locating of the Baltimore and Ohio Railroad, being appointed one of three to examine the country and determine the route.[9] He was also locating engineer for the Chesapeake and Ohio canal.

In 1828 he published a "Report of the Survey of a Canal from the Potomac to Baltimore," and in the following year the Franklin

[6] Obituary in *Am. Medical Record*, April 1, 1871. See also F. B. Dexter, *Yale Biographies and Annals*, 1805-15; sixth series. New Haven: Yale Univ. Press, 1911.

[7] In the possession of his grandson, Mr. Peyton J. Van Rensselaer, New York.

[8] In the possession of Mrs. A. Courtland Van Rensselaer, Massachusetts.

[9] Scarf, *Chronicles of Baltimore.*

Institute of Philadelphia brought out his "Specification for an Improvement in Locomotive Engines."

In 1828 he married Rebecca Ann Key (1809-80), daughter of Philip Barton and Ann Plater Key, by whom he had an only son, William Key Howard, who served in the Civil War.

In September, 1829, Howard came to Philadelphia and took steamboat to New York (then requiring twenty-two hours), and several days later voyaged to Albany on the steamer "North America," being somewhat delayed by the vessel grounding. His journey continued from Schenectady by packet-boat to Utica, Rochester and Buffalo. Thence onward by steamboat to Sandusky, to load passengers and goods, and to Detroit, where he dined with Governor Cass on October 8. On October 14 he was at Pigeon Prairie, and two days later at the mission at St. Joseph's, whence he proceeded to the shore of Lake Michigan and returned to Chicago.

His little diary[10] ends abruptly at this point, and the reason for this journey, an extended one for that time in America, is not stated, although one may surmise that it was for the purpose of examining inland waterways.

Howard got together an immense private library,[11] covering all branches of science and literature. When it was sold, after his death, there were included with it his "Surgical Instruments for Amputating, a pair of Duelling Pistols by Mortimer, and 20 dozen Madeira and Sherry Wines and Curacao, and Maraschino, &c." It is not without interest to discover that among the books were the following: "La Nouvelle Héloise," Saussure's "Voyages" (4to.), Auldjo's "Ascent of Mont Blanc," Coxe's "Switzerland," Ebel's "Traveller's Guide through Switzerland," "Lettres sur la Route de Genève a Milan," Leuthold's "Cent Vues Suisses," a "Carte du Mont Blanc," and twelve copies of his own "Ascent to the Summit of Mont Blanc." For its time this was an unusually good alpine collection.

Dr. Howard's untimely death from causes which cannot now be ascertained occurred in 1834. His likeness is preserved in a

[10] Collection of the American Alpine Club, presented by Mr. C. R. Howard.

[11] "Catalogue of the Splendid Library and Philosophical, Chemical and Astronomical Apparatus, of the late Dr. William Howard, to be sold at Auction, commencing on Wednesday, Dec. 10th, 1834, at 10 o'clock. . . . The sale will take place at No. 175 Baltimore Street, over the clothing store of Mr. S. T. Walker. Grundy & Co., auctioneers." (Library of Congress.)

youthful portrait,[12] apparently of the English school, painted abroad during the course of his journey with Van Rensselaer.

Several years ago, when comparing Howard's book with the text of his paper in the *Analectic Magazine*, I came to the conclusion that both accounts must have been based on a journal. Only recently I discovered that the manuscript was still extant, in the possession of his grandson, Mr. W. Key Howard, of Virginia, who has kindly permitted me to examine it.

In addition to the manuscript, there is a sketch-book with rough drawings, made on the Riviera, the Rhine and elsewhere. Howard wrote in this from time to time, copying chemical formulae, details of various machines and scientific apparatus which interested him. On the flyleaf of the book is the autograph of his guide,[13] who inscribes his name *Marie Coutet fils, guide a cha Mo Nÿx.*

There is a tantalizing remainder of an expense account for Chamonix, the page being torn down the middle and the marginal half lost. All that can be made out is that Howard and Van Rensselaer bought milk and gloves, paid the guides a *pourboire*; and made a note to purchase a new thermometer—as they had the misfortune to break the one loaned them by Dr. Paccard.[14]

Howard then jotted down the graphic notes of the ascent, which follow:

"Set out from Chamouny Sunday, July 11, at 5 o'clock—at 10 began to cross the glacier of Boisson—danger—cracks—cross ladder—narrow ridges—cracks deep—stone long time falling—arrive 5 o'clock grand mulet—surrounded by ice—9 guides—found water—cold 4° above freezing Reaumer.

"Monday, 3 o'clock, left grand mulet—ascent difficult—grand plateau—breakfast—snow good—steepest ascent—steep slopes along side of which we walked on footsteps cut with axe—ended in a

[12] In the possession of his grandson, Mr. C. R. Howard, Virginia.

[13] Couttet was the son of Saussure's old guide and, at the time when Howard and Van Rensselaer employed him, had been three times to the summit of Mont Blanc. In 1820 he was nearly killed in the Hamel accident, but lived to accompany Erasmus Galton on his ascent in 1850. Besides Joseph Marie Couttet, Howard and Van Rensselaer were accompanied by David Couttet, Eugéne Couttet, Pierre Carrier, Alexis Devouassoux, Mathieu Balmat and three others.

[14] "Dimanche 11 Juillet, 1819. 2 Américains avec 9 guides sont allés coucher aux Grands-Mulets. Arrivés le lendemain au sommet du Mont-blanc à midi 20, descendus à la Montagne de la Cote le même jour—ils ont cassé mon thermomètre—c'etoit Mr. William Howard du Baltimore et Dr. Vanranselaer de New-York des Etats d'Amérique." (From the *Paccard Journal.*)

precipice—so that a slip would have brought us to bottom—extremely fatiguing—gasping for breath, relief from vinegar and water —last only 10 or 12 steps without halting to gasp—rock—reach top—extremely cold in wind—sheltered warm—sun bright excessively—sky dark indigo blue—thermometer at freezing in sun.

"Arrived at top 12½—view around injured by clouds—all the highest alps at our feet—staid top 1½—descend much easier though full as dangerous—at grand plateau sun brighter than ever—below snow soft—sank up to thighs every 2 or 3 steps—descent to grand mulet extremely fatiguing—reaching it, however, at 5½*—rest—arranged our tent—charcoal fire—not so cold as last night.

"Tuesday—set out 4—crossed the glacier—snow hard—tracks of chamois—got to Chamouny 10½, the lower part of our faces one sore—eyes much inflamed."

"*—Saw below a bridge of snow over a deep precipice, we had crossed day before, tumble in."

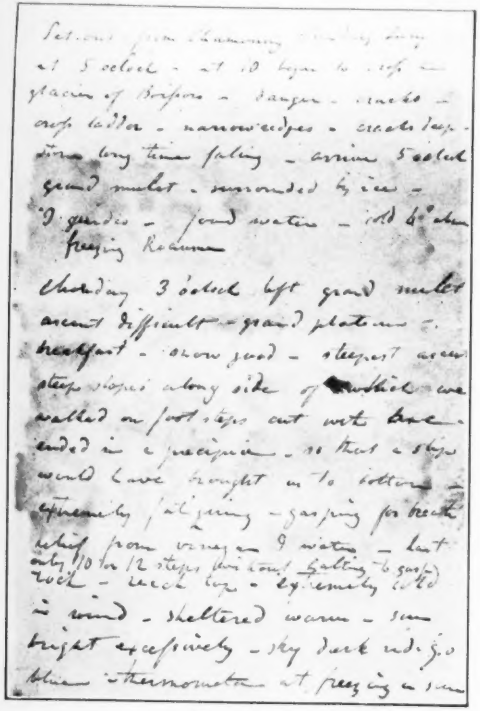
The manuscript of the book, which is to be distinguished from the preceding notes, in a little red-morocco volume, is written in Howard's fine hand. Dated Geneva, July 22, 1819, it is entitled a "Journey to the Summit of Mont Blanc, July, 1819," and begins, "My dear Mother . . .," concluding, "Your affectionate son, Wm. Howard." The frontispiece by Howard is a wash-drawing of "Mont Blanc, from the Lac de Chede, distant 9 miles," while further on is the sketch entitled, "Passing a crevice in the Glacier of Boissons," which differs in the number and position of the climbers from the illustration in the printed book. At the end is a map, done in sepia, apparently original, "Mont Blanc, with the path to its Summit."

The manuscript is substantially the same as the text of the printed book and, for that reason is not reprinted here.[18] At the end, however, is a summary which confirms the figures of time required in the ascent, as follows:

Recapitulation

Sunday, July 11, 1819—Left Chamouny for Mont Blanc—passed the glacier of Boisson, arrived at 5 P.M. at the Grand Mulet, where we slept.

[18] The full text will be found in *A. J.*, xxxiii, 18.



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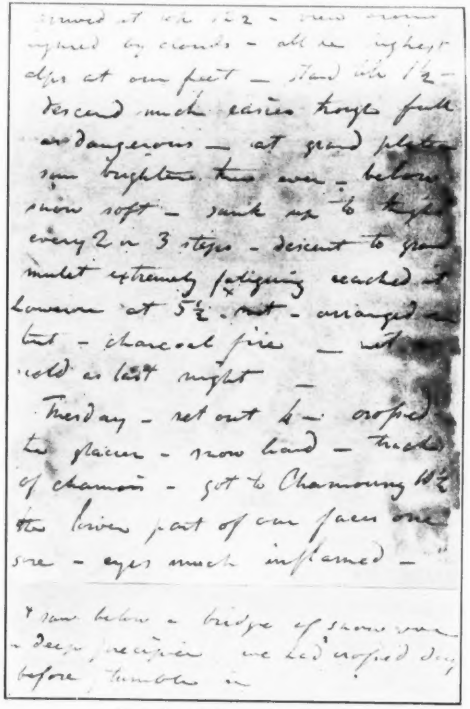
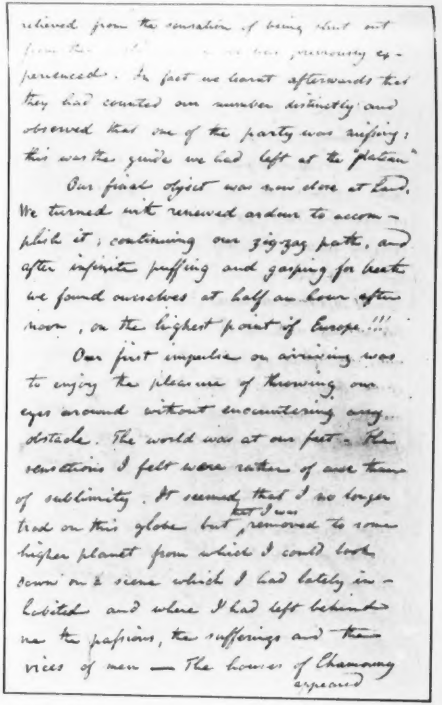
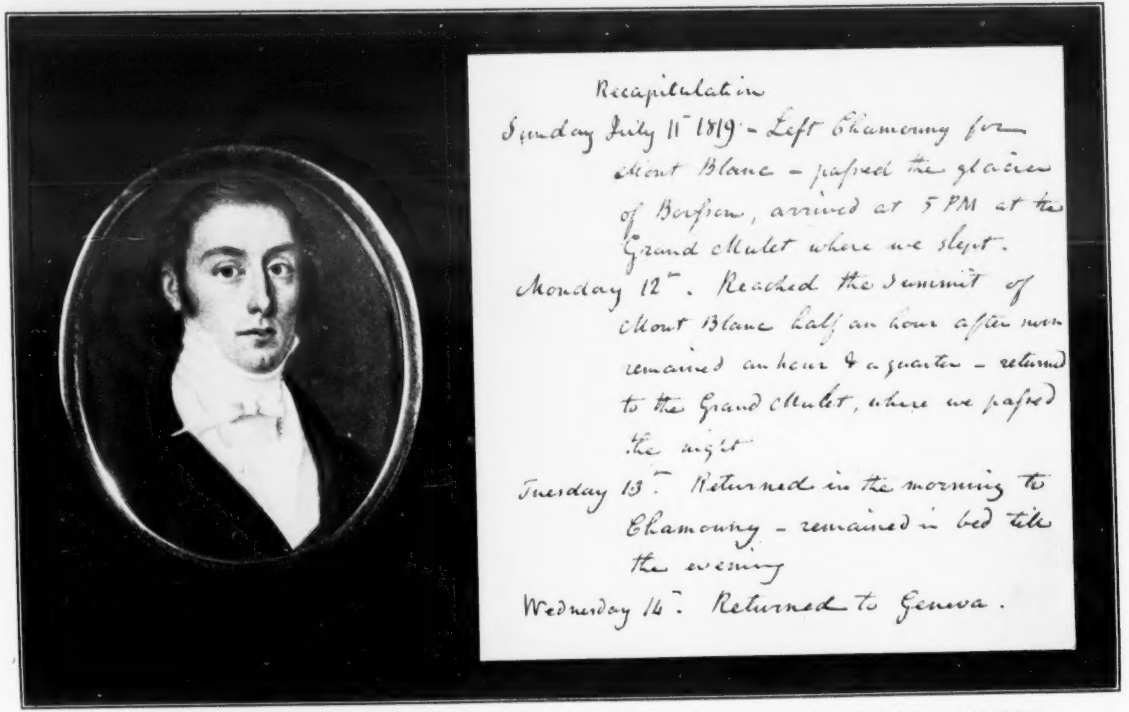


Second and Concluding Page.

FACSIMILE OF HOWARD'S SKETCH BOOK, GIVING NOTES OF THE ASCENT



PAGE OF HOWARD'S MANUSCRIPT JOURNAL DESCRIBING ARRIVAL AT SUMMIT OF MONT BLANC



Recapitulation

Sunday July 11th 1819 - Left Chamouny for Mont Blanc - passed the glaciers of Boissons, arrived at 5 PM at the Grand Mulet where we slept.

Monday 12th. Reached the Summit of Mont Blanc half an hour after noon remained an hour & a quarter - returned to the Grand Mulet, where we passed the night

Tuesday 13th. Returned in the morning to Chamouny - remained in bed till the evening

Wednesday 14th. Returned to Geneva.

JEREMIAH VAN RENSSELAER (1793-1871)
From a miniature of about 1820.

PAGE OF RECAPITULATION AT END OF HOWARD'S MANUSCRIPT JOURNAL

Monday, 12—Reached the summit of Mont Blanc half an hour after noon, remained an hour and a quarter—returned to the Grand Mulet, where we passed the night.

Tuesday, 13—Returned in the morning to Chamouny—remained in bed till the evening.

Wednesday, 14—Returned to Geneva.

Van Rensselaer survived his old companion by thirty-seven years, and seems to have had no further interest in mountaineering, although, later on, he enjoyed relating his experience to his children. But this was characteristic of the times, and Howard appears to have had more of the climbing instinct than was usual. While he admitted that "we have purchased perhaps too dearly the indulgence of our curiosity," he was quick to add that "the difficulties are past and the gratification remains."

Howard and Van Rensselaer were men of giant mind, approaching genius, which in no wise detracts from our remembering them as the first American conquerors of Mont Blanc.

JEREMIAH VAN RENSSELAER (1793-1871)
From a miniature of about 1820.

PAGE OF RECAPITULATION AT END OF HOWARD'S MANUSCRIPT JOURNAL

First Ascents and Explorations from the Mons and Freshfield Icefields

ALDEN F. MEGREW

TWENTY-EIGHT years ago a great peak was discovered in British Columbia, only six miles to the west of Mt. Forbes; a solitary mountain mass, isolated from the numerous icefields and rising to an altitude of 10,770 ft. Messrs. Collie and Stutfield were its discoverers, and since 1902 no attempt had been made to approach it. Their object was not to reach this peak, which they named Bush Mountain, but to find Mt. Columbia, and they attacked from the Columbia River by way of the Bush valley. In three weeks they advanced from Donald to within five or six miles of its base, where they were turned back largely by the denseness of the British Columbia "jungle."

When we started out last year our objective was not limited to Bush Mountain alone. We wished also to climb in and to reconnoitre from the Freshfield group. We left Lake Louise on June 28th with three packers and fifteen horses. Dyson Duncan and myself were the only climbers, for it was not until two days later, at Bow Lake, that our party was completed by the addition of Dr. Thorington, Mr. O. E. Cromwell and Peter Kaufmann, the Swiss guide.[1] Our pack-train was increased here to twenty-seven horses, five packers and five travelers, and with this outfit we proceeded directly to the Freshfield group, which we reached on July 4th. First of all we planned to climb Pangman Peak, situated at the northwest corner of the Freshfield névé. Starting from a bivouac at Niverville meadow, we crossed a series of moraines, heading straight for our objective. Once on the Pangman glacier, we ascended it to a col between Pangman Peak and a slight eminence 9,600 ft. high. One glance at the mountain showed that it would not "go" under the existing conditions. All the way up the glacier we had been wading through snow from knee to waist deep. Pangman itself was covered with new snow, and just after we arrived gentle avalanches began slipping off the steep rocks down the precipitous slopes towards the Bush valley. Under such conditions this side of Pangman is impossible, but after a dry season it might very well

[1] For additional details of the expedition, see *A. J.*, May, 1931, and notes on glacial measurements elsewhere in the present JOURNAL.

Photo. A. Megrew

PANGMAN PEAK

be climbed from the col, although it is rather a steep face, considering the rotten rock. The only other evident way of reaching the summit would be to climb Mt. Dent and traverse the entire length of the ridge. This, however, would prove not only extremely long, but also difficult on account of the number of gendarmes along the ridge.

After having abandoned hope of reaching the summit of Pangman Peak, Duncan and I turned our attention to Mt. Freshfield, partly because a guideless ascent of the mountain had never been made, and partly because it is the most outstanding peak of this group. Steve Latam, our head-packer, had never been up a real mountain, so we agreed to take him along, and I'm afraid that it will be his last climb. Although he seemed to enjoy it, I rather think that he failed to solve the great enigma of why people spend their time on the high hills.

As the ascent is well known I shall not go into details. But after having read Messrs. Collie and Stutfield's account of the first ascent we hardly expected to find the south face a steep wall of snow and ice. Half-formed cornices and a general angle of about fifty degrees forced us to cut steps from the "Frozen Lake" for about seven hundred feet to the heavily-corniced summit. However, our efforts were well rewarded, for the day was utterly cloudless, cold and clear; one of those rare days when the mountains and the weather are harmoniously perfect. From the top we had an excellent view of Bush Mountain, some ten miles away. We could not detect any obvious route up the peak, for it is flanked on all sides by steep icefalls, and even if these were overcome the route to the summit from the basin at the head of the icefalls is not self-evident. It had taken us five hours to reach the summit of Freshfield from the main camp at the tongue of the Freshfield glacier.

After a day of rest we started out with Dr. Thorington, Mr. O. E. Cromwell and Peter Kaufmann, their guide, to climb Mt. Skene (10,100 ft.). This was a first ascent, and very easy. We approached by a moderately steep couloir between Mts. Skene and Strahan, and then reached the summit by easy snow slopes. The ascent had taken four hours from camp. From Skene, Duncan and I crossed shale slopes to the summit of Strahan (9,960 ft.), where another cairn was built, while the rest of the party went across the Conway glacier to make a first ascent of Mt. Conway.

After leaving the Freshfield group we moved over to Glacier Lake and camped on the flats about two miles above the lake, and about a mile from the Lyell icefall.

Our initial climb here was an unguided ascent of Mt. Forbes by the west ridge. We bivouacked just below the icefall of the Mons glacier in a hollow protected from the wind by a high moraine on one side and Division Mountain on the other. From our tents we could see the sunlight lingering in crimson tints on the great north face of Forbes, the fifth highest peak in the Rockies.

At 1 o'clock we were up and preparing breakfast. Mr. Cromwell, Peter, Duncan and I planned to climb by the west ridge, but when we reached the base of the cone, conditions looked favorable for an attempt on the north ridge, hitherto unclimbed. As it seemed inadvisable for too large a party to try the north ridge, Duncan and I went on across the face to ascend the west ridge as we had already planned. We reached the summit at 9 o'clock, having taken six hours and a quarter from the bivouac. Mr. Cromwell and his guide joined us half an hour later, after scaling the north ridge, and we lingered for two hours enjoying a warm and windless sojourn.

Our next trip was an investigation of the easiest approach to Bush Peak. It was too late in the season for a real attack on the mountain, and all we could hope for was to find a route to the base, and, if possible, a feasible route to the summit. The former we did do, but the latter remains for those who have the time and equipment to make a real base camp, and can stay in the valley as long as is necessary to cope with the weather and the mountain.

On July 15th we left the Mons bivouac at 3 in the morning, carrying approximately fifty pounds apiece, including food, tent, sleeping-bags and extra clothing. There were three of us, Duncan, Steve and myself. Proceeding up the Mons glacier we crossed the Divide by an easy snow pass between Mons Peak and Division Mountain, which we took the liberty of naming Mons pass. Then following a series of snow couloirs, we left the glacier at tree-line. Bush mountain had been in view ever since crossing the Divide, but for the first time on our trip forest fire smoke was heavy and it prevented us from distinguishing more than the general outline. More impressive than the mountain, however, was the magnificent gorge at the head of the Icefall Brook valley. I have never seen the equal of this canyon, for it drops in a sheer precipice for nearly

Photo. D. Dunton

CANYON AT THE HEAD OF ICE FALL BROOK

Photo. A. Megrew

MT. MESSINES FROM BERGSCHRUND OF MT. ST. JULIEN

3,000 ft. From one point, without turning around, we counted twenty-one waterfalls over five hundred feet high.

We ought to have realized that any attempt to descend directly to the bottom would be impossible, but at the time we did not know that this whole side of the valley, as far as the western end of Mons Peak, is a series of cliffs and slopes covered with timber and alder. This mistake cost us three hours of extremely difficult going. First we descended about five hundred feet, but then a cliff forced us to return above tree-line. Not only did this waste time, but with our heavy packs it entailed considerable effort. Having reached tree-line again we decided to traverse a broad shale-covered ledge, in the hope of finding an easier way down. After a mile and a half we came upon a stream which seemed to lead directly to the flats 3,800 ft. below. But again we were to be disappointed. The stream did lead to the floor of the valley, but a cliff, against whose sides the torrent raged, cut us off and to cross it was too dangerous, as it was deep and we could hear submerged boulders constantly striking against one another with the force of the current.

We lunched and then began cutting through the tangle of underbrush and alder above the cliff. In an hour and a half we had a trail, really a makeshift, for most of it was barely negotiable and we balanced on alder bushes three feet off the ground, but it brought us out on the flats at two-thirty in the afternoon, nine hours and a quarter from the bivouac.

That afternoon we explored down the valley to where Mons Creek joins the Icefall Brook. The views were magnificent. Just above the camp rose the beautiful conical summit of Mt. Arras, capped with a huge hanging glacier. Across the valley were the towering rock and ice slopes of Bush Peak, so heavily veiled by forest fire smoke that route picking was impossible.

After a miserable night, during which the mosquitoes did their best to drive us out of the valley—smudges merely seemed to whet their appetites—we were more than delighted when the sun drove them back to the woods. After breakfast we decided to resume exploration of the valley. We saw that we could not cross the main stream, for a warm night had swollen it. We therefore went down the valley for about a mile and a half, below Mons Creek, but here the timber offered extremely difficult going. Moreover, clouds were beginning to gather so we thought best to beat a hasty retreat to the Glacier Lake camp.

That we had taken nine hours and a quarter to reach the valley might indicate that our route is not well adapted to back-packing, but on the return, knowing exactly how to go, coming up from 3,200 ft. to 8,200 ft., and descending to the bivouac, consumed just seven hours and a quarter, including time out for lunch. This means that to cross from the bivouac to the valley, once a trail is cut, should not take more than six hours. To get over Icefall Brook a tree will have to be felled somewhere just below Mons Creek, as the trees above this point are not large enough to make a secure bridge over which heavy loads could be carried.

On the crest of Mons pass the storm broke; clouds and snow enveloped us; on the moraine above the icefall we were drenched with rain. For the next two hours we ran nearly all the way, anxious to get back to our comfortable balsam beds, a real meal, and a good game of poker in the tepee after supper.

The following day it rained steadily until late in the evening, when it cleared. So we decided to have one more climbing day. We hoped to make three first ascents of the peaks at the southeast corner of the Mons Icefield, Mts. Cambrai (10,380 ft.), Messines (10,290 ft.), and St. Julien (10,140 ft.).

Duncan and I were up at midnight at the bivouac, and off at 1 o'clock. Clouds were low on Forbes, and it seemed doubtful if the weather would give us a chance to make even one ascent. The marmots had been whistling all night, as if they expected rain. The snow on the glacier was in good condition, and although we managed to run into what is apparently the only patch of crevasses in the whole icefield, we finally found a detour around and reached the summit of Cambrai at 5.25. We built a cairn, ate some chocolate, and making our way back over the rocky northwest ridge, soon reached the snow and glissaded to the col between Cambrai and Messines. Then we hurried up the steep and narrow snow ridge, to the summit of Messines. It was only 6.40, but the clouds were already on Cambrai only half a mile away. St. Julien stood a long way off, but we still had hopes of out-running the weather. We descended Messines by the same route, and skirting along the north base, went around the mountain and struck straight up the northeast face of St. Julien, crossing the bergschrund by a none-too-secure snow-bridge. The climbing on the upper ridge was not too difficult but rather treacherous, for the rock was both steep and rotten. For an instant the clouds blew off Cambrai and

we enjoyed an excellent view of the two peaks we had just left, but then the wind rolled the cloud-bank back and we did not see them again.

On reaching the summit we built our third cairn, ate a real breakfast, and then started back for camp. Our old snow-bridge looked a bit too unsafe for the descent, so we traversed the length of the mountain towards the west before crossing the bergschrund. Once off the peak, we ran down the icefield, reaching the bivouac at 11.20 A.M. Our final day had been entirely successful, and now we lay on the grass outside the tent watching the oncoming storm, as peak after peak was enveloped in the grey clouds, already reminiscing on our trials and our triumphs.

On Rocks

ELIZABETH KNOWLTON

THE rocks up which one makes one's way in climbing a mountain are to me not merely pieces of inanimate matter. They have very definite personalities of their own, distinct individualities, not to be confused with those of the mountains of which they may happen to be a part.

No, the great mountains are quite another affair. They are a different order of being from ourselves, always withdrawn and elusive, only to be apprehended in some semi-mystical fashion, by faculties not called into play in valley life. But the rocks we may know intimately. We struggle with them in the closest physical contact; our minds grapple with the wide range of problems they offer; the emotional reactions they rouse in us are of the everyday sort; our association is that of equals and friends.

I

Among the most delightful of my rock friends I count the pale yellow Dolomite limestone. Obviously feminine in the delicious fantasy of its wit, it is subtle and of "infinite variety" in the contacts it offers. Where most rocks give you only a very limited choice of responses, this will provide handholds and footholds in all directions and of all types. However awkward and heavy-footed you may be, it will, in its less exigent moments, go more than half-way to meet you, and make possible some sort of pleasant friendship.

But even from the most blundering beginner it demands a certain delicacy of touch, demands it not crudely, but like some "grande dame" who keeps fine and true her relation with the clumsiest yokel, without his being conscious of the influence of her exquisite tact. So, without officiousness or arrogance, the Dolomite rock brings out in the most stupid, unsuspected capabilities of subtlety and finesse; teaches tricks of balance, and position-shifting, and counter-tensions; suggests new and ingenious holds, offered so tactfully that the user thinks them his own idea; gently insinuates delicacy in the place of force, brain for brawn.

So much for its ways with those new to its charms. Its best qualities are revealed only by long-continued intimacy. For all

its whimsies, it is fundamentally genuine and true. Its holds are solid, and it never, like some deceitful rocks, lures one on to holds which look secure from below, but prove hopelessly downward-sloping under the hand. On the contrary, it often in feminine fashion teases with meagre promises, then gives with free graciousness in the end, when what looks like some tricky, uncertain edge reveals itself to the touch as a true "Thank-God handhold." Its promising routes, also, do not peter out into hopelessness, but instead provide infinite taxes for your ingenuity, on their varied roads to success. To its complete trustworthiness in all respects there are of course exceptions, but only enough to prove that it, like the rest of the world, is not infallible, and not too perfect for this uncertain life.

For greater knowledge, it has greater rewards. The more you have to bring to it, the more it has to offer. After a difficult and successful passage I have sometimes caught myself actually smiling, with the delight one feels in a clever exchange of repartee, where one's opponent, though more brilliant than oneself, does not try to defeat or crush, but instead leads one on with him to ever new heights of wit. Such light and subtle passages, such ingenious holds, and sudden unexpected shifts, but always the contact maintained, always, though sometimes only by a hair, the fundamental balance of the relationship held true!

II

In complete contrast to the Dolomite rock is the granite of Chamonix. No particular subtlety here, no great variety. Its taste in humor runs generally to uncouth practical jokes, and there is something repetitious even in its surprises, something labored and obvious about its most strenuous efforts after the unusual.

It resembles the type of man who needs all his real worth to redeem him from the charge of being gauche and boring. Never any particular novelty—you can always prophesy just the type of difficulty to be met; no choice of holds—only one, and that often hard to reach, or sometimes none at all. It scorns tact and diplomacy, it refuses to help, it demands from its admirers not delicacy but sheer brute strength. To know it, one must force oneself upon it, with no surety of welcome.

But although it is ponderous and unresponsive at best, and although in its occasional sportive moods, it often becomes almost

grotesque in its efforts to be playful, yet in general its rugged dignity arouses respect.

"I adapt myself to no one. I am as I am. Take me or leave me," says the Chamonix granite.

Then by sheer weight and worth it compels one to take it. The holds it offers, though few, are flat, large and honest; its holdless cracks and edges are rough and firm. One has, to be sure, to do all the work oneself in making the contact, but the final response one gets is solid and satisfactory. Often I have wondered with annoyance if it were really necessary for it to be *quite* so "difficile." I have felt the irritated exhaustion one feels with a dinner partner who is painfully "heavy in the hand," slow and dull and refusing obstinately to respond on any subject. But no annoyance will change it, or render it more subtle, amusing or compliant. On the other hand, the high demands it makes on muscle and effort cause one to value, perhaps unduly, every inch won. To establish an easy friendly relationship means a real battle, but it also gives the satisfaction of a real conquest. What one gains in the end is an intimacy close, lasting and sure.

III

The rocks of the Pennines, the Oberland, the Selkirks and other ranges where I have climbed, are to me—with some notable exceptions—less unusual and outstanding personalities. This impression may be due to the fact that one seldom has occasion to come so to grips with them, and often I have not got beyond a casual acquaintanceship.

Generally they seem simple and honest and very pleasant to meet. Sometimes they are a little crude, perhaps, and sometimes, if one must see too much of them, one may find their easy amiability a little monotonous. Even such variety as they have, is likely to be due rather to some chance formation decreed by the mountain than to the actual texture of the rock. But to this rule there are, of course, exceptions, and the most superficially obvious rock may develop on closer association some trait that fires the imagination, and makes it stand out in memory.

There is, for instance, the regular route up the Matterhorn—simple, kindly, easy to get along with, but giving occasionally a stirring glimpse of great primitive strength, and power for evil. There are many attractive knife-edges, such as the Rothorngrat,

which, like interesting people, talking well on great subjects, make us forget about them completely—for all their stimulating contacts, their piquant sharp solitudes and "à cheval" diversions—simply by force of the vast new views of the world they spread before us. There are innumerable rocks that masquerade sometimes in snow and verglas, which, like all well-chosen masquerade costumes, bring out intriguing sides of their personalities, which one would not have suspected from acquaintance with them in their ordinary dress.

I have, in fact, never known rock that had not something rewarding to offer, in one mood or in another; except rotten rock.

IV

Rotten rock (and here I think reluctantly of some of our Canadian Rockies) is not to me treacherous, which might seem the obvious characterization. It is—and I speak, of course, of a whole mountain of rottenness, for even the best of rock has its rotten moments—merely without color. For it evades. It has not the strength and honesty to come out frankly and be anything. You know nothing of its fundamental qualities—except that it is not to be depended on. You can never come into a close relationship to it, for a firm grip or a strong tread demolishes it. It does not *wish* to establish a relationship with anyone. It slides out from under. As a personality, it simply is not there. . . .

Such are, for me, the characteristics of some of the different kinds of rock I have known. If I seem to any climber to have misunderstood or misrepresented his favorite rock friend, I ask pardon in advance, because no two people can possibly see another individual in exactly the same light.

Difficult Peaks of the Sierra Nevada

NORMAN CLYDE

ON NUMEROUS occasions the writer has received inquiries as to the character of the mountaineering which the Sierra Nevada affords. In reply it might be said that compared with the Alps or the Canadian Rockies, difficult peaks are relatively few in this range. This is due partly to the lack of snow and ice in any great quantities during the summer, to the uniformity of weather conditions, to the dependability of the rocks and the presence of at least one easy route up the majority of the mountains. In the Sierra Nevada, however, from the vicinity of Mt. Whitney at the south, to the Yosemite in the north, there are about a score of rather difficult climbs.

Mt. Whitney in summer conditions is very easy by either of the two routes usually followed. But a few miles to the southeast of it is Mt. Le Conte (13,960 ft.), a somewhat stiff climb up a steep chute and a precipitous wall. Immediately to the north of Mt. Whitney is Mt. Russell (14,190 ft.) with several routes to the summit, all rather arduous, especially the one leading up a chimney on its south face. Scattered through the group are several lower, but craggy peaks, which afford interesting rock scrambles.

Almost directly westward from Mt. Whitney and across the Kern River are the Kaweahs, a spectacular and somewhat isolated group of mountains. Of these the Black Kaweah (13,752 ft.) is generally regarded a difficult climb. The standard route leads up a steep couloir on the south face. A second—accomplished but once—follows the jagged crest of the western arête. North of the Kaweahs, along the Great Western Divide, Milestone Mountain (13,643 ft.) is a spectacular scramble of moderate difficulty; Table Mountain (13,646 ft.) possesses some ice work in a couloir to the north and rock work up its south face, while to the north of it Thunder Mountain (13,646 ft.) has some excellent rock climbing on its summit pinnacles. On the Kings-Kern Divide, running east and west and joining the Great Western Divide and the main crest, there is some good climbing on Mt. Ericsson (13,635 ft.), Mt. Stanford (13,983 ft.) and Junction Peak (13,903 ft.). On the main crest is Mt. Williamson (14,384 ft.), one of the finest peaks in the Sierra and a somewhat strenuous climb. All of the

peaks mentioned above are within or on the borders of the Sequoia National Park.

In the amphitheater of the South Fork of the Kings River, adjoining the Sequoia Park, Deerhorn Mtn. (13,275 ft.), the North Guard (13,304 ft.), the East Vidette and Mt. Gardiner (12,742 ft.) might be regarded as moderately difficult climbs, while in the next amphitheater to the north, the isolated pyramid of Mt. King (12,909 ft.) is generally looked upon as one of the best rock climbs in the Sierra Nevada.

Probably there are more interesting and difficult climbs in the Palisade group, at the headwaters of a branch of the Middle Fork of the Kings River, than in any other in the Sierra Nevada. The finest and loftiest of these is the North Palisade (14,254 ft.). From the south it is climbed by a very excellent route—in the main up a steep chimney—discovered some thirty years ago by Joseph Le Conte, Jr., while from the north it can be ascended by two recently discovered ones, the most easterly up a steep ice-filled chute, over a broken cliff-face and thence along a beautiful arête climb to the summit; the more westerly, by following another icy couloir for a few hundred feet and thence directly up the north face to the summit. In early summer, the ice in the couloirs is usually well-covered with snow and the bergschund bridged with it, but later in the season the latter is likely to be open and the couloirs filled with glare ice. These two climbs are among the best to be had in the Sierra.

A short distance to the east of the North Palisade is Mt. Sill (14,200 ft.). Although readily climbed from the south, two fairly difficult routes have been found up a cliff wall above the Palisade glacier and thence along an arête to the summit; a variation of this is up a steep snow chute to the northwest and along a broken wall to the same arête; still another, up a steep couloir to the northeast and from its head along the southeastern arête to the summit. To the southeast of Mt. Sill stands the Middle Palisade (14,049 ft.), next to the North Palisade the most spectacular of the group and one of the best climbs in the Sierra. A chimney and face climb from the south is the only known route to the summit. To the northwest of the North Palisade are Mts. Winchell (13,749 ft.) and Agassiz (13,832 ft.): the former scalable only by several routes from the east which converge in a narrow knife-edge some distance below the summit; the latter by an easy route up its southeastern

face and a difficult one up its northeastern one. In the glacial amphitheater to the north and east of the higher members of the group, there are a number of excellent rock climbs, the finest of which is Temple Crag (13,016 ft.), one of the most beautiful pinnacle crags in the Sierra. About midway down the Middle Fork of the Kings River are the Devil's Crag (12,612 ft.), a difficult rock climb made but once.

Some twenty miles to the northwest of the Palisades is the Evolution group, a series of rugged, lofty peaks encircling a high basin almost entirely above timberline, an elevation of about 11,500 ft. above sea-level in this region. The most difficult of these peaks is Mt. Darwin, a flat-topped mountain attaining an elevation of 13,841 ft. Almost surrounded by inaccessible cliffs it can be scaled only by picking one's way up numerous chimneys to the southwest or by one or more chutes to the north and thence along an arête to the summit. The highest point is a ragged gendarme standing out from the table-like top, which is rather difficult of ascent and has been climbed but few times. The next mountain to the south along the main crest is Mt. Haeckel, a beautiful peak of a Gothic type, whose tapering pyramid affords an interesting climb.

A few miles to the north of Mt. Darwin is a lofty, isolated peak with a craggy summit towering several thousand feet above a desolate basin mostly above timber-line. The last five hundred feet of its ascent leads up a steep knife-edge to the highest point, 13,972 ft. above sea-level. It ranks among the best climbs in the Sierra.

Northwest a few miles from Mt. Humphreys is the Abbott group. It encircles a basin almost entirely above tree line. The hardest peak to climb of these is Bear Creek Spire (13,705 ft.), whose steep Matterhorn-like summit affords an excellent face and arête-climb up the last several hundred feet. Mt. Abbott (13,736 ft.) and Mt. Mills (13,352 ft.) likewise are good rock climbs.

In the Yosemite region difficult peaks are rather few. On the southeastern border of the park Mt. Ritter (13,156 ft.) is a fairly hard scramble and the Minarets (12,278 ft.), a line of sharp pinnacles to the south of it, afford rather strenuous rock climbs. Mt. Lyell (13,090 ft.), the most beautiful mountain in the park, is only slightly difficult. To the south of the lower portion of Tuolumne Meadows are a number of granite pinnacles, some of which are difficult. The best of these, both from a scenic and a

climbing standpoint, is probably Cathedral Peak (10,952 ft.). The upper portion of its spire is an excellent rock scramble. Mt. Clark (11,515 ft.), a handsome peak to the south of Merced River, has some interesting knife-edge climbing near the top.

Although the above sketch enumerates most of the difficult climbs found in the Sierra Nevada, doubtless others will be discovered by enterprising climbers. None of those described are extremely difficult, but most of them are sufficiently so to interest the skilful alpinist.

The Problem of the Wilderness

ROBERT MARSHALL

IT IS appalling to reflect how much useless energy has been expended in arguments which would have been inconceivable had the terminology been defined. In order to avoid such futile controversy I shall undertake at the start to delimit the meaning of the principal term with which this paper is concerned. According to Dr. Johnson a *wilderness* is "a tract of solitude and savageness," a definition more poetic than explicit. Modern lexicographers do better with "a tract of land, whether a forest or a wide barren plain, uncultivated and uninhabited by human beings."[1] This definition gives a rather good foundation, but it still leaves a penumbra of partially shaded connotation.

For the ensuing discussion I shall use the word *wilderness* to denote a region which contains no permanent inhabitants, possesses no possibility of conveyance by any mechanical means and is sufficiently spacious that a person in crossing it must have the experience of sleeping out. The dominant attributes of such an area are: first, that it requires any one who exists in it to depend exclusively on his own effort for survival; and second, that it preserves as nearly as possible the primitive environment. This means that all roads, power transportation and settlements are barred. But trails and temporary shelters, which were common long before the advent of the white race, are entirely permissible.

When Columbus effected his immortal debarkation, he touched upon a wilderness which embraced virtually a hemisphere. The philosophy that progress is proportional to the amount of alteration imposed upon nature never seemed to have occurred to the Indians. Even such tribes as the Incas, Aztecs and Pueblos made few changes in the enviornment in which they were born. "The land and all that it bore they treated with consideration; not attempting to improve it, they never desecrated it."[2] Consequently, over billions of acres the aboriginal wanderers still spun out their peripatetic careers, the wild animals still browsed in unmolested meadows and

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NOTE—This interesting paper is reprinted by the kind permission of the author and of *The Scientific Monthly*.—Ed. *A. A. J.*

[1] Webster's New International Dictionary.

[2] Willa Cather, "Death Comes for the Archbishop."

the forests still grew and moldered and grew again precisely as they had done for undeterminable centuries.

It was not until the settlement of Jamestown in 1607 that there appeared the germ for that unabated disruption of natural conditions which has characterized all subsequent American history. At first expansion was very slow. The most intrepid seldom advanced further from their neighbors than the next drainage. At the time of the Revolution the zone of civilization was still practically confined to a narrow belt lying between the Atlantic Ocean and the Appalachian valleys. But a quarter of a century later, when the Louisiana Purchase was consummated, the outposts of civilization had reached the Mississippi, and there were foci of colonization in half a dozen localities west of the Appalachians, though the unbroken line of the frontier was east of the mountains.[3]

It was yet possible as recently as 1804 and 1805 for the Lewis and Clark Expedition to cross two-thirds of a continent without seeing any culture more advanced than that of the Middle Stone Age. The only routes of travel were the uncharted rivers and the almost impassable Indian trails. And continually the expedition was breaking upon some "truly magnificent and sublimely grand object, which has from the commencement of time been concealed from the view of civilized man."[4]

This exploration inaugurated a century of constantly accelerating emigration such as the world had never known. Throughout this frenzied period the only serious thought ever devoted to the wilderness was how it might be demolished. To the pioneers pushing westward it was an enemy of diabolical cruelty and danger, standing as the great obstacle to industry and development. Since these seemed to constitute the essentials for felicity, the obvious step was to excoriate the devil which interfered. And so the path of empire proceeded to substitute for the undisturbed seclusion of nature the conquering accomplishments of man. Highways wound up valleys which had known only the footsteps of the wild animals; neatly planted gardens and orchards replaced the tangled confusion of the primeval forest; factories belched up great clouds of smoke where for centuries trees had transpired toward the sky, and the

[3] Frederic L. Paxson, "History of the American Frontier."

[4] Reuben G. Thwaites, "Original Journals of the Lewis and Clark Expedition, 1804-1806," June 13, 1805.

ground-cover of fresh sorrel and twin-flower was transformed to asphalt spotted with chewing-gum, coal dust and gasoline.

Today there remain less than twenty wilderness areas of a million acres, and annually even these shrunken remnants of an undefiled continent are being despoiled. Aldo Leopold has truly said:

"The day is almost upon us when canoe travel will consist in paddling up the noisy wake of a motor launch and portaging through the back yard of a summer cottage. When that day comes canoe travel will be dead, and dead too will be a part of our Americanism. . . . The day is almost upon us when a pack train must wind its way up a graveled highway and turn out its bell mare in the pasture of a summer hotel. When that day comes the pack train will be dead, the diamond hitch will be merely a rope and Kit Carson and Jim Bridger will be names in a history lesson."[8]

Within the next few years the fate of the wilderness must be decided. This is a problem to be settled by deliberate rationality and not by personal prejudice. Fundamentally, the question is one of balancing the total happiness which will be obtainable if the few undesecrated areas are perpetuated against that which will prevail if they are destroyed. For this purpose it will be necessary: first, to consider the extraordinary benefits of the wilderness; second, to enumerate the drawbacks to undeveloped areas; third, to evaluate the relative importance of these conflicting factors, and finally, to formulate a plan of action.

I

The benefits which accrue from the wilderness may be separated into three broad divisions: the physical, the mental and the esthetic.

Most obvious in the first category is the contribution which the wilderness makes to health. This involves something more than pure air and quiet, which are also attainable in almost any rural situation. But toting a fifty-pound pack over an abominable trail, snowshoeing across a blizzard-swept plateau or scaling some jagged pinnacle which juts far above timber all develop a body distinguished by a soundness, stamina and élan unknown amid normal surroundings.

[8] Aldo Leopold, "The Last Stand of the Wilderness," *American Forests and Forest Life*, October, 1925.

More than mere heartiness is the character of physical independence which can be nurtured only away from the coddling of civilization. In a true wilderness if a person is not qualified to satisfy all the requirements of existence, then he is bound to perish. As long as we prize individuality and competence it is imperative to provide the opportunity for complete self-sufficiency. This is inconceivable under the effete superstructure of urbanity; it demands the harsh environment of untrammeled expanses.

Closely allied is the longing for physical exploration which bursts through all the chains with which society fetters it. Thus we find Lindbergh, Amundsen, Byrd gaily daring the unknown, partly to increase knowledge, but largely to satisfy the craving for adventure. Adventure, whether physical or mental, implies breaking into unpenetrated ground, venturing beyond the boundary of normal aptitude, extending oneself to the limit of capacity, courageously facing peril. Life without the chance for such exertions would be for many persons a dreary game, scarcely bearable in its horrible banality.

It is true that certain people of great erudition "come inevitably to feel that if life has any value at all, then that value comes in thought,"[6] and so they regard mere physical pleasures as puerile inconsequences. But there are others, perfectly capable of comprehending relativity and the quantum theory, who find ecstacy in non-intellectual adventure. It is entirely irrelevant which viewpoint is correct; each is applicable to whoever entertains it. The important consideration is that both groups are entitled to indulge their penchant, and in the second instance this is scarcely possible without the freedom of the wilderness.

One of the greatest advantages of the wilderness is its incentive to independent cogitation. This is partly a reflection of physical stimulation, but more inherently due to the fact that original ideas require an objectivity and perspective seldom possible in the distracting propinquity of one's fellow men. It is necessary to "have gone behind the world of humanity, seen its institutions like toadstools by the wayside."[7] This theorizing is justified empirically by the number of America's most virile minds, including Thomas Jefferson, Henry Thoreau, Louis Agassiz, Herman Melville, Mark Twain,

[6] Joseph Wood Krutch, "The Modern Temper."
[7] Henry David Thoreau, "Journals," April 2, 1852.

John Muir and William James, who have felt the compulsion of periodical retirements into the solitudes. Withdrawn from the contaminating notions of their neighbors, these thinkers have been able to meditate, unprejudiced by the immuring civilization.

Another mental value of an opposite sort is concerned not with incitement but with repose. In a civilization which requires most lives to be passed amid inordinate dissonance, pressure and intrusion; the chance of retiring now and then to the quietude and privacy of sylvan haunts becomes for some people a psychic necessity. It is only the possibility of convalescing in the wilderness which saves them from being destroyed by the terrible neural tension of modern existence.

There is also a psychological bearing of the wilderness which affects, in contrast to the minority who find it indispensable for relaxation, the whole of human kind. One of the most profound discoveries of psychology has been the demonstration of the terrific harm caused by suppressed desires. To most of mankind a very powerful desire is the appetite for adventure. But in an age of machinery only the extremely fortunate have any occasion to satiate this hankering, except vicariously. As a result people become so choked by the monotony of their lives that they are readily amenable to the suggestion of any lurid diversion. Especially in battle, they imagine, will be found the glorious romance of futile dreams. And so they endorse war with enthusiasm and march away to stirring music, only to find their adventure a chimera, and the whole world miserable. It is all tragically ridiculous, and yet there is a passion there which cannot be dismissed with a contemptuous reference to childish quixotism. William James has said that "militarism is the great preserver of ideals of hardihood, and human life with no use for hardihood would be contemptible." [8] The problem, as he points out, is to find a "moral equivalent of war," a peaceful stimulation for the hardihood and competence instigated in bloodshed. This equivalent may be realized if we make available to every one the harmless excitement of the wilderness. Bertrand Russell has skilfully amplified this idea in his essay on "Machines and the Emotions." He expresses the significant conclusion that "many men would cease to desire war if they had opportunities to risk their lives in Alpine climbing." [9]

[8] William James, "The Moral Equivalent of War."

[9] Bertrand Russell, "Essays in Scepticism."

In examining the esthetic importance of the wilderness I will not engage in the unprofitable task of evaluating the preciousness of different sorts of beauty, as, for instance, whether an acronical view over the Grand Canyon is worth more than the Apollo of Praxiteles. For such a rating would always have to be based on a subjective standard, whereas the essential for any measure is impersonality. Instead of such useless metaphysics I shall call attention to several respects in which the undisputed beauty of the primeval, whatever its relative merit, is distinctly unique.

Of the myriad manifestations of beauty, only natural phenomena like the wilderness are detached from all temporal relationship. All the beauties in the creation or alteration of which man has played even the slightest rôle are firmly anchored in the historic stream. They are temples of Egypt, oratory of Rome, painting of the Renaissance or music of the Classicists. But in the wild places nothing is moored more closely than to geologic ages. The silent wanderer crawling up the rocky shore of the turbulent river could be a savage from some prehistoric epoch or a fugitive from twentieth century mechanization.

The sheer stupendousness of the wilderness gives it a quality of intangibility which is unknown in ordinary manifestations of ocular beauty. These are always very definite two or three dimensional objects which can be physically grasped and circumscribed in a few moments. But "the beauty that shimmers in the yellow afternoons of October, who ever could clutch it." [10] Any one who has looked across a ghostly valley at midnight, when moonlight makes a formless silver unity out of the drifting fog, knows how impossible it often is in nature to distinguish mass from hallucination. Any one who has stood upon a lofty summit and gazed over an inchoate tangle of deep canyons and cragged mountains, of sunlit lakelets and black expanses of forest, has become aware of a certain giddy sensation that there are no distances, no measures, simply unrelated matter rising and falling without any analogy to the banal geometry of breadth, thickness and height. A fourth dimension of immensity is added which makes the location of some dim elevation outlined against the sunset as incommensurable to the figures of the topographer as life itself is to the quantitative table of elements which the analytic chemist proclaims to constitute vitality.

[10] Ralph Waldo Emerson, "Nature."

Because of its size the wilderness also has a physical ambiency about it which most forms of beauty lack. One looks from outside at works of art and architecture, listens from outside to music or poetry. But when one looks at and listens to the wilderness he is encompassed by his experience of beauty, lives in the midst of his esthetic universe.

A further peculiarity about the wilderness is that it exhibits a dynamic beauty. A Beethoven symphony or a Shakespearean drama, a landscape by Corot or a Gothic cathedral, once they are finished become virtually static. But the wilderness is in constant flux. A seed germinates, and a stunted seedling battles for decades against the dense shade of the virgin forest. Then some ancient tree blows down and the long-suppressed plant suddenly enters into the full vigor of delayed youth, grows rapidly from sapling to maturity, declines into the conky senility of many centuries, dropping millions of seeds to start a new forest upon the rotting débris of its own ancestors, and eventually topples over to admit the sunlight which ripens another woodland generation.

Another singular aspect of the wilderness is that it gratifies every one of the senses. There is unanimity in venerating the sights and sounds of the forest. But what are generally esteemed to be the minor senses should not be slighted. No one who has ever strolled in springtime through seas of blooming violets, or lain at night on boughs of fresh balsam, or walked across dank holms in early morning can omit odor from the joys of the primordial environment. No one who has felt the stiff wind of mountain-tops or the softness of untrodden sphagnum will forget the exhilaration experienced through touch. "Nothing ever tastes as good as when it's cooked in the woods" is a trite tribute to another sense. Even equilibrium causes a blithe exultation during many a river crossing on tenuous foot log and many a perilous conquest of precipice.

Finally, it is well to reflect that the wilderness furnishes perhaps the best opportunity for pure esthetic enjoyment. This requires that beauty be observed as a unity, and that for the brief duration of any pure esthetic experience the cognition of the observed object must completely fill the spectator's cosmos. There can be no extraneous thoughts—no question about the creator of the phenomenon, its structure, what it resembles or what vanity in the beholder it gratifies. "The purely esthetic observer has for the moment for-

gotten his own soul";[11] he has only one sensation left and that is exquisiteness. In the wilderness, with its entire freedom from the manifestations of human will, that perfect objectivity which is essential for pure esthetic rapture can probably be achieved more readily than among any other forms of beauty.

II

But the problem is not one-sided. Having discussed the tremendous benefits of the wilderness, it is now proper to ponder the disadvantages which uninhabited territory entails.

In the first place, there is the immoderate danger that a wilderness without developments for fire protection will sooner or later go up in smoke and down in ashes.

A second drawback is concerned with the direct economic loss. By locking up wilderness areas we as much as remove from the earth all the lumber, minerals, range land, water-power and agricultural possibilities which they contain. In the face of the tremendous demand for these resources it seems unpardonable to many to render nugatory this potential material wealth.

A third difficulty inherent in undeveloped districts is that they automatically preclude the bulk of the population from enjoying them. For it is admitted that at present only a minority of the genus *Homo* cares for wilderness recreation, and only a fraction of this minority possesses the requisite virility for the indulgence of this desire. Far more people can enjoy the woods by automobile. Far more would prefer to spend their vacations in luxurious summer hotels set on well-groomed lawns than in leaky, fly-infested shelters bundled away in the brush. Why then should this majority have to give up its rights?

III

As a result of these last considerations the irreplaceable values of the wilderness are generally ignored, and a fatalistic attitude is adopted in regard to the ultimate disappearance of all unmolested localities. It is my contention that this outlook is entirely unjustified, and that almost all the disadvantages of the wilderness can be minimized by forethought and some compromise.

The problem of protection dictates the elimination of undeveloped areas of great fire hazard. Furthermore, certain infringements

[11] Irwin Edman, "The World, the Arts and the Artist."

on the concept of an unsullied wilderness will be unavoidable in almost all instances. Trails, telephone lines and lookout cabins will have to be constructed, for without such precaution most forests in the west would be gutted. But even with these improvements the basic primitive quality still exists: dependence on personal effort for survival.

Economic loss could be greatly reduced by reserving inaccessible and unproductive terrain. Inasmuch as most of the highly valuable lands have already been exploited, it should be easy to confine a great share of the wilderness tracts to those lofty mountain regions where the possibility of material profit is unimportant. Under these circumstances it seems like the grossest illogicality for any one to object to the withdrawal of a few million acres of low-grade timber for recreational purposes when one hundred million acres of potential forest lie devastated.[12] If one-tenth portion of this denuded land were put to its maximum productivity, it could grow more wood than all the proposed wilderness areas put together. Or if our forests, instead of attaining only 22 per cent. of their possible production,[13] were made to yield up to capacity, we could refrain from using three-quarters of the timber in the country and still be better off than we are today.

The way to meet our commercial demands is not to thwart legitimate divertisement, but to eliminate the unmitigated evils of fire and destructive logging. It is time we appreciated that the real economic problem is to see how little land need be employed for timber production, so that the remainder of the forest may be devoted to those other vital uses incompatible with industrial exploitation.

Even if there should be an underproduction of timber, it is well to recall that it is much cheaper to import lumber for industry than to export people for pastime. The freight rate from Siberia is not nearly as high as the passenger rate to Switzerland.

What small financial loss ultimately results from the establishment of wilderness areas must be accepted as a fair price to pay for their unassessable preciousness. We spend about twenty-one billion dollars a year for entertainment of all sorts.[14] Compared with this there is no significance to the forfeiture of a couple of million dollars

[12] George P. Ahern, "Deforested America," Washington, D. C.
[13] U. S. Department of Agriculture, "Timber, Mine or Crop?"
[14] Stuart Chase, "Whither Mankind?"

of annual income, which is all that our maximum wilderness requirements would involve. Think what an enormously greater sum New York City alone sacrifices in the maintenance of Central Park.

But the automobilists argue that a wilderness domain precludes the huge majority of recreation-seekers from deriving any amusement whatever from it. This is almost as irrational as contending that because more people enjoy bathing than art exhibits therefore we should change our picture galleries into swimming pools. It is undeniable that the automobilist has more roads than he can cover in a lifetime. There are upward of 3,000,000 [15] miles of public highways in the United States, traversing many of the finest scenic features in the nation. Nor would the votaries of the wilderness object to the construction of as many more miles in the vicinity of the old roads, where they would not be molesting the few remaining vestiges of the primeval. But when the motorists also demand for their particular diversion the insignificant wilderness residue, it makes even a Midas appear philanthropic.

"Such are the differences among human beings in their sources of pleasure, that unless there is a corresponding diversity in their modes of life, they neither obtain their fair share of happiness, nor grow up to the mental, moral and esthetic stature of which their nature is capable. Why then should tolerance extend only to tastes and modes of life which extort acquiescence by the multitude of their adherents?" [16]

It is of the utmost importance to concede the right of happiness also to people who find their delight in unaccustomed ways. This prerogative is valid even though its exercise may encroach slightly on the fun of the majority, for there is a point where an increase in the joy of the many causes a decrease in the joy of the few out of all proportion to the gain of the former. This has been fully recognized not only by such philosophers of democracy as Paine, Jefferson and Mill, but also in the practical administration of governments which spend prodigious sums of money to satisfy the expensive wants of only a fragment of the community. Public funds which could bring small additional happiness to the mobility are diverted to support museums, art galleries, concerts, botanical gardens, menageries and golf-links. While these, like wilderness areas, are open to the use of every one, they are vital to only a fraction of

[15] "The World Almanac," 1929.

[16] John Stuart Mill, "On Liberty."

the entire population. Nevertheless, they are almost universally approved, and the appropriations to maintain them are growing phenomenally.

IV

These steps of reasoning lead up to the conclusion that the preservation of a few samples of undeveloped territory is one of the most clamant issues before us today. Just a few years more of hesitation and the only trace of that wilderness which has exerted such a fundamental influence in moulding American character will lie in the musty pages of pioneer books and the mumbled memories of tottering antiquarians. To avoid this catastrophe demands immediate action.

A step in the right direction has already been initiated by the National Conference on Outdoor Recreation,[11] which has proposed twenty-one possible wilderness areas. Several of these have already been set aside in a tentative way by the Forest Service; others are undergoing more careful scrutiny. But this only represents the incipiency of what ought to be done.

A thorough study should forthwith be undertaken to determine the probable wilderness needs of the country. Of course, no precise reckoning could be attempted, but a radical calculation would be feasible. It ought to be radical for three reasons: because it is easy to convert a natural area to industrial or motor usage, impossible to do the reverse; because the population which covets wilderness recreation is rapidly enlarging and because the higher standard of living which may be anticipated should give millions the economic power to gratify what is today merely a pathetic yearning. Once the estimate is formulated, immediate steps should be taken to establish enough tracts to insure every one who hungers for it a generous opportunity of enjoying wilderness isolation.

To carry out this program it is exigent that all friends of the wilderness ideal should unite. If they do not present the urgency of their viewpoint the other side will certainly capture popular support. Then it will only be a few years until the last escape from society will be barricaded. If that day arrives there will be countless souls born to live in strangulation, countless human beings who will be crushed under the artificial edifice raised by man. There

[11] National Conference on Outdoor Recreation, "Recreation Resources of Federal Lands," Washington, D. C.

is just one hope of repulsing the tyrannical ambition of civilization to conquer every niche on the whole earth. That hope is the organization of spirited people who will fight for the freedom of the wilderness.

The Rocky Mountains of the United States

HOWARD PALMER

ALTHOUGH the Rocky Mountains constitute perhaps the most important topographical feature of the western United States, few people realize their true extent, or the vast congeries of peaks which they contain. A recent tabulation[1] lists over one hundred groups sufficiently well defined to bear separate names and these, of course, form but a part of the whole. The present paper embodies a rapid survey of the extent, elevation and relative positions of the principal component ranges and traces the course of the Continental Divide among them.

At the outset, it may be well to indicate what the Rocky Mountains are. In general terms, they comprise the system of lofty highlands situated between the great continental plains on the east, and the elevated basins and plateaux that extend from Nevada to Central British Columbia on the west. They correspond approximately with the states of Utah, Colorado, Wyoming, Idaho and western Montana. Almost nowhere does this prodigious uplift present to the beholder a continuous wall of great peaks for any considerable distance, as many suppose. It is rather a vast complex of individual ranges and groups divided one from another by wide areas of rolling tablelands. At two places the latter attain extensive dimensions: Yellowstone Park and Great Divide Basin (60 by 100 miles). These delimit a threefold division of the Rocky Mountain system into north, central and southern portions, and for convenience of description it will be adopted here.

THE SOUTHERN ROCKIES

At the south, the Rockies begin in northern New Mexico where they supply the head waters of the Rio Grande River, flowing southerly and easterly into the Gulf of Mexico. Along the International Boundary in New Mexico and Arizona lies a region of plateaux and scattered minor ranges drained by the Gila River, an eastern tributary of the Colorado. As the Gila takes its source on a subordinate range within fifty miles of the main Rio Grande River,

[1] "Mountains of the United States," Federal Board of Maps, Interior Dept. Building, Washington, D. C., 1929.

the Continental Divide is here narrowed and depressed to comparative insignificance as a topographical feature—a fact which would seem to nullify the time-honored idea that the Rocky Mountains extend into Mexico.[2] In this corner of New Mexico the Southern Pacific Railway crosses the Continental Divide at an elevation of only 4,615 ft. The Trans-Pecos Highlands, east of the Rio Grande, although they reach an elevation of 11,880 ft. in Sierra Blanca, are parted from the Rockies by a plain one hundred miles wide.

The highest peaks of the Rockies in New Mexico are North Truchas Peak (13,306 ft.), Taos Peak (13,145 ft.) and Jicarilla Peak (12,944 ft.), situated north of Santa Fé and Las Vegas in the Sangre de Cristo range, which divides the waters of the Rio Grande from those of the Canadian River and passes northward into Colorado as the Culebra (Snake) range.

North of New Mexico the Rockies rapidly grow wider and loftier until in Utah and northern Colorado the system of ranges is three hundred miles broad. In the latter state forty-six peaks exceed 14,000 ft., Mt. Elbert (14,420 ft.) being the primate of the entire chain and the second highest in the United States. Colorado includes upwards of 250 summits ranging between 13,000 and 14,000 ft. Northwest of this state, the elevation and width of the Rockies decrease, until at the Canadian Boundary they are less than one hundred miles across.

The principal ranges and groups of the Southern Rockies in Colorado are described in the following paragraphs.

The Colorado, or Front range, faces the plains, running north and south in an abrupt and rather uniform escarpment of serrated peaks. It contains five above 14,000 ft., of which Pikes Peak (14,109 ft.) and Longs Peak (14,255 ft.) may be mentioned.

Roughly paralleling the Front range to the west extend almost in line: The Park range (seven peaks over 14,000 ft., of which Buckskin Peak (14,296 ft.) is the highest), the Sawatch range and the Sangre de Cristo range. The last two are perhaps the most magnificent groups in the state. The granite-cored Sangre de Cristo range, forty miles long and ten miles wide, exhibits an imposing relief of over a mile, being jagged and rough in the extreme towards the southwest. It contains five peaks above 14,000 ft., the loftiest being Sierra Blanca (14,390 ft.), and the next, Crestone (14,233

[2] See: "The International Geography," by H. R. Mill, page 775.

ft.).[3] The Sawatch range, eighty miles long and twenty miles wide, bristles with lofty pointed peaks. It contains eight surpassing 14,000 ft., of which La Plata Peak (14,332 ft.), Mt. Massive (14,420 ft.) and Mt. Elbert may be noticed.

The southwestern portion of the state presents irregular groups, of which the imposing Elk mountains, forty miles long, form the northerly member. They display a wild jumble of sharp, conical peaks and ragged pinnacles and spires. The highest is Castle Peak (14,259 ft.), and the most striking from its colored rock formations is North Italian Peak (13,225 ft.). Other notable groups in this quarter are the San Juan mountains, running east and west for eighty miles with a width of forty miles, the loftiest peak of which is Mt. San Louis (14,149 ft.); the San Miguel mountains, culminating in Mt. Wilson (14,250 ft.) and containing the spectacular spire of Lizard Head (13,156 ft.); the Needle mountains, a southwesterly buttress of the San Juan range, containing thirteen peaks between 13,000 and 14,000 ft., dominated by Sunlight Peak (14,084 ft.), and the Uncompahgre mountains. This great complex of ranges is incredibly wild and rugged, possessing literally scores of peaks above 12,000 ft., many as yet without names.

The Continental Divide enters southern Colorado between the Rio Grande and San Juan Rivers, following the crest of the San Juan range. Passing thence across the Cochetopa hills, it gains the Sawatch range and continues northerly, parting the waters of the Arkansas River from the Gunnison and Grand tributaries of the Colorado. Looping around Leadville, it traverses the southern part of the Park range to the Front range. Following this past Longs Peak (14,255 ft.) it soon veers abruptly west to the Park range once more. Here it continues northerly to Great Divide basin where, at Creston (7,102 ft.), it intersects the Union Pacific Railway.

In general, it may be said that the Rockies of Colorado are characterized by rounded tops and evenly-slanting lower slopes covered with broken rock. They bear little permanent snow and are practically devoid of glaciers. The forests are often scanty and, in general, the impression of great altitude is wanting, owing to the high base-level from which the peaks spring. Nevertheless, by

[3] The Spanish Peaks (13,623 ft.) at its southern extremity, where it projects sufficiently to become part of the Front range, are notable as examples of volcanic activity.

reason of its exceptionally clear and bracing air and the presence of vast park-like expanses in the very midst of the loftiest peaks, Colorado will always remain a glorious mountain playground. Remarkable evidences of former glaciation are everywhere apparent in prodigious moraines and numberless cirques dotted with rock-bound lakelets.

In central Utah, the Wasatch mountains, overlooking the Great Basin for one hundred miles, consist of abrupt ranges crowned with sharp peaks, of which Mt. Delano (12,240 ft.) is the highest. Other prominent summits are Mt. Timpanogos (11,957 ft.), with a small glacier, and Mt. Nebo (11,887 ft.). Seven more exceed an elevation of 11,000 ft. A neighbor of the Wasatch mountains is the Uinta group, having an east and west trend of 150 miles and a width of about 25 miles. Many of the peaks possess a rugged alpine configuration, the highest being King's Peak (13,500 ft.), Emmons Peak (13,428 ft.), Gilbert Peak (13,422 ft.), and three others exceed 13,000 ft. in height.

The Central Rockies

The Wasatch and Uinta groups are linked up with the backbone of the Rockies in the latitude of Yellowstone Park by a system of irregular uplands that run north and south along the western boundary of Wyoming, and drain on the east into the headwaters of the Green River. In this quarter are the Crawford Mts., the Wyoming range, the Gros Ventre Mts., the Snake River range and the Teton range, all lying on the Pacific slope, west and northwest of Great Divide basin.

Scenically, the Teton range is perhaps the most impressive in all the Rocky Mountains. Of rugged granitic formation, it is characterized by an abrupt relief (6,000 to 7,000 ft. above the flat country of Jackson's Hole) and by sharp pyramidal summits affording excellent rock-work for the climber. It occupies an area about forty miles by ten. The principal peaks are the Three Tetons, (Grand Teton, 13,747 ft.) and Mt. Moran (12,100 ft.) at the northerly extremity. John Coulter in 1807 was the first white man known to have seen the group, which contains a number of small glaciers.

Returning now to the line of the Continental Divide, the conspicuous Wind River range of Wyoming comes next in order

northwest of Great Divide basin, which separates the Central Rockies from the Southern Rockies, as above indicated. It is a "front range" of the system and adjoins the Gros Ventre Mts. on the east. In length about 100 miles, the central *massif* attains elevations above 13,000 ft. and sends out lateral offshoots cut deeply by canyons. Wind River Peak at the southern extremity reaches an elevation of 13,500 ft. Other conspicuous summits are Fremont Peak (13,720 ft.), climbed by John C. Fremont in 1842; Gannett Peak (13,785 ft.), the highest in Wyoming, and Chimney Rock (13,340 ft.). Many small glaciers occur on the northeast slopes. One, the Dinwoody, is some three miles wide and a mile long. Both scenery and mountains are truly alpine and charming lakes and waterfalls abound.

Towards the northeast, across the Big Horn basin, in north central Wyoming, lie the Big Horn mountains, a huge outlier of the Rockies pushed out into the plains. They trend north and south for about 120 miles and are from 30 to 50 miles wide. The elevations range between 11,000 and 13,000 ft., rising some 9,000 ft. above the neighboring prairies. Several of the peaks exceed 13,000 ft. Occasional small glaciers rest in rock-bound amphitheaters. The highest summit is Cloud Peak (13,165 ft.). Others that have received names are Black Tooth (13,014 ft.), Penrose Peak (12,443 ft.), and Mather Peak (12,410 ft.).

The Northern Rockies

North of Yellowstone Park in the bend of the Yellowstone River, the Beartooth and adjacent ranges contain what appear to be the principal mountains of this category. Around Mt. Cowen (11,190 ft.) and Emigrant Peak (10,960 ft.) the relief reaches 6,400 ft., and Granite Peak (12,850 ft.), the highest in Montana, is located here, as are Grasshopper glacier and several smaller ice masses. The Beartooth group includes many peaks approximating 12,000 ft., and presents a very rugged and precipitous front towards the northeast. Other mountains hereabouts are the Needle (10,933 ft.), the Pyramid (10,720), Index Peak (11,741 ft.) and Pilot Peak. The volcanic Absaroka range along the eastern boundary of the park is eighty miles long by fifty miles wide. Among the loftiest summits are Mt. Schurz (10,900 ft.), Mt. Atkins (10,900 ft.), Mt. Eagle (10,800 ft.), Mt. Table (10,800 ft.) and Mt. Cathedral (10,900 ft.). All of the peaks in the foregoing ranges

lie from twenty to forty miles east of the Continental Divide, severed from it by the headwaters of the Yellowstone River. West of the Yellowstone River and northwest of the park at the headwaters of the Missouri River are situated the Gallatin, Madison, Jefferson and Bridger ranges (7,000 to 11,000 ft.), largely composed of granite rocks, but with volcanic breccias in the Gallatin range (Mt. Blackmore, 10,196 ft.). In the Madison range, The Wedge reaches 11,251 ft.

From the Wind River group, the Divide pursues a winding course across the Park in a northwesterly direction, averaging about 8,000 ft. in elevation. Just beyond the western boundary of the Park, it dips to 6,938 ft. at Reas pass, loops around Henry Lake and then rises to 10,000 ft. once more in Sawtel Peak. Shifting next to a westerly course for something like 75 miles, it drops to 6,800 ft. at Monida, rises to 11,000 ft. in Mt. Garfield soon after and swings abruptly to the northwest for 100 miles to the 114th meridian. This stretch of the Rockies is designated the Beaverhead Mts. on some of the maps. Near the 114th meridian occur Crowfoot and Gibbon passes (each 7,000 ft.). Here the axis of elevation bifurcates in a surprising way, one branch continuing at an angle of 90 degrees towards the southwest only to resume its northwesterly trend through the Bitterroots (7,000-8,000 ft.) beyond Nez Perce pass, to within 125 miles of the Canadian border; while the other branch veers equally sharply to the northeast through the Butte and Helena districts, carrying the Continental Divide. The principal peaks of the Bitterroots occupy projecting spurs: El Capitan (9,936 ft.) and St. Mary (9,333 ft.). Mt. Lolo (9,570 ft.), near Missoula, overlooks the famous Lolo pass, traversed by Lewis and Clark. Beyond this, the range diminishes towards the northwest and the 125-mile interval is occupied by the Coeur d'Alene (6,000 ft.) and Cabinet ranges, the latter being picturesquely sculptured and boasting of a glacier on Bear Peak (9,000 ft.). These two ranges, together with the adjacent Flathead range northwest of Flathead Lake, lie to the west of the Rocky Mountain trench and therefore are not, strictly considered, part of the Rocky Mountain system, but rather intermediate links between that system and the Purcell and Selkirk systems of Canada.

West of the Bitterroots in central Idaho, stretches a vast labyrinth of sharp peaks and ridges designated in the south the Salmon River mountains and in the north the Clearwater mountains. They

attain elevations of from 11,000 to 12,000 ft., Mt. Hyndman (12,078 ft.) in south central Idaho being the highest in that state.

In the district of Butte and Helena, the Continental Divide is ill-defined and inconspicuous, the passes around Butte averaging 6,000 ft. or less. Mullan pass near Helena is 5,870 ft. The Anaconda range contains Mt. Haggin (10,598 ft.) and Mt. Evans (10,635 ft.). Beyond Helena, the Divide swings to a north-northwest course and follows the Lewis range, which is the principal axis of elevation of the northern Rockies, almost to the Canadian border. In its northern reaches along the great plains the Lewis range is deeply sinuous and is marked by cliffs of exceptional size and steepness. Its southern section, between Lewis and Clark pass (6,320 ft.), and Marias pass (5,202 ft.) on the Great Northern Railway, is about eighty miles long and has three measured summits: Scapegoat (9,210 ft.), Cliff (9,120 ft.) and Pentagon (9,400 ft.). The Lewis range as a whole is so wild and formidable that not even a wagon road crosses it for 150 miles north of Lewis and Clark pass. Ten miles south of the Canadian Boundary the Continental Divide shifts from the Lewis range to the Clark range, which parallels the former fifteen miles to the west across the Waterton-MacDonald valley. The Clark range starts at Mt. Heavens north of Lake MacDonald and terminates at North Kootenay pass in Alberta, where it becomes a front range of the Rockies.

The other ranges in this general latitude are of secondary importance but may be mentioned for completeness. They are the Galton (White Fish), Swan and Mission ranges. The latter (60 miles long) lies south of Flathead Lake. Mt. MacDonald (9,800 ft.), the highest summit, supports a well-conditioned glacier and rises some 6,800 ft. above its base. Between the Mission range and the Lewis range is the Swan range, which attains an elevation of 10,400 ft. in Mt. Holland, northeast of Flathead Lake. The Galton range extends in the same line west of the upper valley of Flathead River.

Fifteen hundred square miles of the Clark and Lewis ranges between the Great Northern Railway and the Canadian Boundary have been set aside as Glacier National Park. Here is concentrated some of the very finest scenery of the Rockies. Bold peaks, hewn out with an exaggerated saw-tooth sculpture, two-score small glaciers of the "shelf" variety, and a myriad of gorgeously-hued lakes, combine to give this region a rare distinction. The Park possesses

perhaps twenty peaks between 9,000 and 10,000 ft. and half a dozen others between the latter figure and 10,438 ft., which is attained in Mt. Cleveland, its loftiest summit. Of the glaciers, the largest are Blackfoot, Agassiz and Kintla, covering areas of from two to five square miles apiece.

PROCEEDINGS OF THE CLUB

ANNUAL MEETING

At the 28th Annual Meeting held at the Explorers' Club, New York City, January 24th, 1931, thirty-seven (37) members were present and a number of guests.

The Secretary reported the death of our honorary member, Baron Gabet, and active members, Dr. Freeman Allen and Newman D. Waffl, one resignation and election of seventeen (17) active members, making the present membership two hundred and one (201) active members and ten (10) honorary members.

The Treasurer reported receipts for the year of $2,448.06. Payments made were $2,438.93. Funds on hand amounted to $22,-209.88. The number of members making voluntary payment of $10.00 for annual dues is increasing. The distance of members from the eastern centers of activity is not deterring them from giving the Club this support.

The Librarian reported that the Library now consists of 752 bound volumes and about 450 unbound journals and pamphlets.

Mr. E. P. Beckwith stated that the collection of 4,296 photographs had been catalogued, arranged and placed in four filing cabinets.

The Entertainment Committee, by W. R. Hainsworth, reported that four informal meetings had been held at the Club Rooms.

The Officers and Councillors were re-elected for another year.

Memorials for our deceased members were presented as follows: Baron F. Gabet, prepared by Charles E. Fay, read by the Secretary; Newman D. Waffl, by Frank N. Waterman, and Dr. Freeman Allen, by Henry S. Hall, Jr.

After adjournment of the business meeting, the following informal illustrated talks were given:

KENNETH A. HENDERSON: Report of the guideless climbing done by the Harvard Mountaineering Club at Glacier, B. C.

DR. J. MONROE THORINGTON: Report of a trip with O. E. Cromwell and guides, Conrad Kain and Peter Kaufmann, in the Purcell range, to the head of Dutch Creek, the glacial source of the Columbia River and mapping watershed between Earl Grey pass and the head of Findlay Creek, with ascents of "Saffron Peak" (10,018 ft.) and Mt. Findlay (10,786 ft.) the latter the highest point known south of the groups immediately adjacent to Earl Grey pass. See *Geographical Journal*, Vol. lxxvii, p. 455.

OLIVER EATON CROMWELL: Climbs in the little-visited Bugaboo group. (See article elsewhere herein.)

KENNETH A. HENDERSON: First ascent of Mt. Owen and other climbs in the Teton range. (See paper herein.)

WILLIAM R. HAINSWORTH: Showed moving pictures of an attempt with Dr. Strumia and the late N. D. Waffl on Mt. Robson, and other climbs. (See elsewhere herein.)

DR. MAX M. STRUMIA: Short explanation of a possible route on Mt. Robson, avoiding the familiar dangerous passages.

DUDLEY TYLER SMITH: First ascent of unnamed peaks in Wind River mountains, Wyoming, near Gannet Peak.

LAWRENCE COOLIDGE: Trip in the Caucasus mountains, including Mt. Elbruz and attempt on the difficult Mt. Ushba. (See article herein.)

A film of rock climbing by the Harvard Mountaineering Club on the cliffs of Cannon Mt. in New Hampshire was explained by K. Henderson.

ANNUAL DINNER

The annual dinner of the Club was held at the Hotel McAlpin, New York City, January 24, 1931. Eighty-three members and guests were present.

President Ladd presided. Brief addresses were made by Rev. Harry P. Nichols and Dr. J. W. A. Hickson.

Miss Miriam E. O'Brien talked, with the lantern, of her 1930 climbs in the Alps, including the long and difficult southeast ridge of the Dreieckhorn, part of which was new; of her experiences in the Brenta group of the Dolomites, where on the ascent of the Campanile Basso di Brenta via Fehrmann, she and her guide were

caught by a sudden storm and compelled to remain for over two hours on an exposed rock face; of a traverse of Mte. Rosa on ski in May from the Gnifetti Cabane; of spending the night at the Margharita Hut, with descent to Zermatt; of a climb from Rosenlaui over Klein Wellhorn, Welligrat to Gross Wellhorn, Wellhorngrat to Wettersattel and Gleckstein Hut and of the third ascent of the Finsteraarhorn by its northeast face, made without bivouac.

Mr. Edward E. Goodale, a member of the Admiral Byrd Antarctic Expedition, gave a most interesting account of the long sledge trip south from Little America to lay provisions for the use of Admiral Byrd in case of a forced landing, on his aeroplane trip from Little America to the South Pole, including exploration of the region of the Queen Maud range and Mt. Hansen (highest peak, about 15,000 ft.). The party did not attempt to climb any of the high mountains.

Mr. Terris Moore showed films taken by Allen Carpé and by himself on their ascent, with Andy Taylor, of Mt. Bona, a large snow mountain, the fourth highest in Alaska, which they reached from the coast by pack train, sledge and back packing, establishing a base camp and two outlying camps on the mountain slopes.

IN MEMORIAM

FREEMAN ALLEN
1870—1930

Doctor Freeman Allen had been a member of the American Alpine Club since 1924. Although joining the Club after the close of his active climbing career, he had nevertheless taken a keen interest in the current exploits of its members, particularly of the younger group. He had several times attended the dinners of the Harvard Mountaineering Club in recent years and seemed to derive the greatest pleasure in meeting and talking with those who had done some particularly good climbs in the Alps or elsewhere.

Dr. Allen was born in Stockbridge, Mass., and was the son of the Rev. Henry Freeman Allen. He graduated from Harvard in 1893 and from Harvard Medical School in 1899. Dr. Allen specialized in anaesthesia, in which field he was a pioneer, as well as a noted practitioner and teacher.

He was a versatile athlete, a good horseback rider and swimmer, and had a particular fondness for the mountains. His climbing career covered a period of twenty years in the Alps from 1894 to 1913. The list of his climbs, which is incomplete, includes many of the more arduous Alpine ascents, and he had the reputation of being a first-rate climber.

He had a charming and quiet personality. Modesty, a quaint sense of humor, an almost boyish enthusiasm for anything in which he was interested, and an alert mind, were his outstanding characteristics. Tributes from his friends and associates tell of his great courage and of the universal love and respect which they had for him. One feels much regret that we in the Club had not known him better. He is survived by his wife and a son.

H. S. H., Jr.

BARON FRANCISQUE GABET
1846—1930

There passed away in Paris on the third of May at the age of 84 years Baron Francisque Gabet, President of the Club Alpin Francais, honorary member of the Alpine Club (London), of the Canadian Alpine Club and of our own Club since 1920. A few days later he was laid at rest in the Savoyard village near Chambery, the ancestral home, in sight of the snow-clad peaks that first greeted his childhood eyes and inspired in him the affection that was to influence profoundly his maturer life and continue undiminished to the end.

The July-August number of *La Montagne*, the periodical of the French Alpine Club, opens with an affectionate appreciation of Baron Gabet by M. Queras, an intimate associate in the work of the Club, and later in the "Chronique" of that number, one may read the words spoken at the burial service by his successor, rehearsing the events of his career and closing with a touching farewell. To these I am chiefly indebted in preparing this sketch.

Francisque Gabet was born of a distinguished Savoyard family in 1846 in Chambery, where his childhood and early youth appear to have been passed. He studied law in Paris and was admitted to the bar, but did not enter upon the practice of that profession. Settling in Lyons he first was interested as a broker (agent de change), then turned to a more strictly commercial career.

To quote M. Queras: "An administrator of the first order, an enlightened and patient *realisateur* (bringer to pass) he foresaw the future of those two great inventions, the phonograph and the cinema." It was in the latter that his business interests chiefly centered, although he was connected with other prosperous enterprises.

His interest in organized alpinism began in Lyons with the founding of the local section of the Club Alpin Francais in April, 1876, only three months later than that of the Appalachian Mountain Club. He successively held the offices of *archiviste*, chairman of the excursion committee, treasurer, secretary, vice-president and president. In 1908 his business interests called for his removal from Lyons to Paris. Here he was elected a member of the Direction Centrale of the parent Club and later of its more important executive committee.

The Great War left the French Alpine Club greatly reduced in membership and resources. Baron Gabet, now at the age of 73, was recognized as the man of the hour and called to the presidency. Under his energetic leadership the lost ground was recovered and the Club continued its successful career. He held the office of president until 1922. On the death of his successor in 1929, though now in his 83rd year, he was again elected president and yet again in 1930, a few days only before his death.

It was in the year following his first election to that office that his most notable feat of realization occurred, the bringing to pass of his favorite project—the International Congress of Alpine Clubs, held at Monaco under the patronage of the Prince. To quote again from his associate: "The difficulties are many, hearts fail, doubts assail the most optimistic. Gabet has faith in a successful outcome and inspires it in some among us. His perseverance, amounting at times to obstinacy, conquers every obstacle." The Congress opens with a brilliant evening function at Nice. "Then the great week: the unforgettable sessions in the lecture hall of the Oceanographic Museum with their train of trips, excursions and receptions. The President of the Alpine Club is present at all these functions, which he animates with his eloquent words, the party in the palace gardens, the banquet at the golf club at La Turbie, the opening and closing sessions.

". . . It is not merely a success, it is a triumph. We call to witness the memories of all those who participated in those beautiful sunlit days of 1920."

As a fortunate participant in that extraordinary Congress I gladly corroborate this estimate of its success and gratefully add my personal impression of the man himself.

At the burial service he was characterized as "*ce parfait galant homme*," and it was this exquisite distinction that impressed me when we first met. Most kind was his welcome to his contemporary from overseas—a kindness that found public expression on several occasions during the Congress. In his inimitable leadership of every phase of its functions he exhibited the somewhat unusual combination of the "live wire" and the "gentleman of the old school." One would have taken him for a trained diplomat sooner than for an active business man. A portrait, reproduced in *Appalachia* (Vol. XV., No. 2) gives a faithful picture of his distinguished personality.

Finally, it would appear that his rise to eminence in the alpinistic world was not due to any noteworthy accomplishment as an active alpinist—neither of his eulogists make reference to such distinction—but to his devoted promotion and energetic leadership of an organization founded to foster in others the love for the mountain that was his own earliest inheritance.

CHAS. E. FAY.

CHARLES E. FAY

1846—1931

In the death of our beloved first president, Professor CHARLES ERNEST FAY, The American Alpine Club has to mourn the loss of one who rendered it indispensable service, and who contributed greatly to its prestige in the Alpine world. One of the first to espouse the cause of organized mountaineering in this country, he identified himself with it for more than half a century, and in the broadest sense perhaps no one has done more by voice, by pen, and by example, to advance its interests, particularly in the east. His influence has been profound and the results of his labors far reaching. Only the future can appraise them adequately. His enthusiasm and perennial youthfulness of spirit made him seem immune to the inhibitions of advancing age, so that the news of his sudden but peaceful end came with uncommon poignancy to a host of friends.

He was one of the founders of the American Alpine Club, and as president for the first six years of its existence, worked devotedly to secure its sound establishment. His interest in the Club never

waned, and his habitual presence at the annual gatherings was universally recognized as constituting no mean part of their charm. A message of greeting and cheer from the members assembled at the annual meeting in January, 1931, was telegraphed to Professor Fay at its close. It is gratifying to know that he was strong enough to have it read to him the same evening, only a few hours before he passed away.

Although an admirer of mountains from boyhood, he was over fifty before his real experience of alpinism began. In 1901, an accident to his knee operated to curtail indulgence in further arduous climbing. He was widely known among mountaineers in other parts of the world and he acted to some extent as an agent in the preparations for the successful Italian expedition to Mt. St. Elias in 1897, meeting the party *en route* to their destination. In 1888 and 1890 he visited Colorado and California, ascending a 14,000-ft. peak adjacent to Sierra Blanca and several others; also San Antonio.

Charles Ernest Fay was born in Roxbury, Massachusetts, March 10th, 1846. He was the son of Rev. Cyrus H. Fay, pastor of the Universalist Church of Roxbury and Anne Hyne Fay, a native of Tavistock, Devonshire, England, who died when he was four years old.

His childhood was passed in New York City and Concord, New Hampshire, where he attended Pembroke Academy; his youth in Middletown, Connecticut, and Providence, Rhode Island, where he was a student in the high school, the youngest member of his class. He taught in Nashua, N. H., and was master of the Middle District Grammar School of Bristol, R. I. In 1865 he entered Tufts College, from which he received the degree of Bachelor of Arts in 1868. For a year he was special instructor in mathematics and at the same time supplied the pulpit of the Allen Street Unitarian Church of North Cambridge.

But his principal interest lay in the field of foreign languages and literature. In 1869 he was appointed instructor in French and German at Tufts with leave of absence for one year's study in Europe. In 1871 Fay was promoted to a full professorship and later given the title of Wade Professor of Modern Languages. He served from 1873 to 1881 as secretary of the School of Arts and Sciences. In 1877 he received the degree of Master of Arts and in 1900 the honorary degree of Litt.D. From 1912 to 1923 he was Dean of the Graduate School.

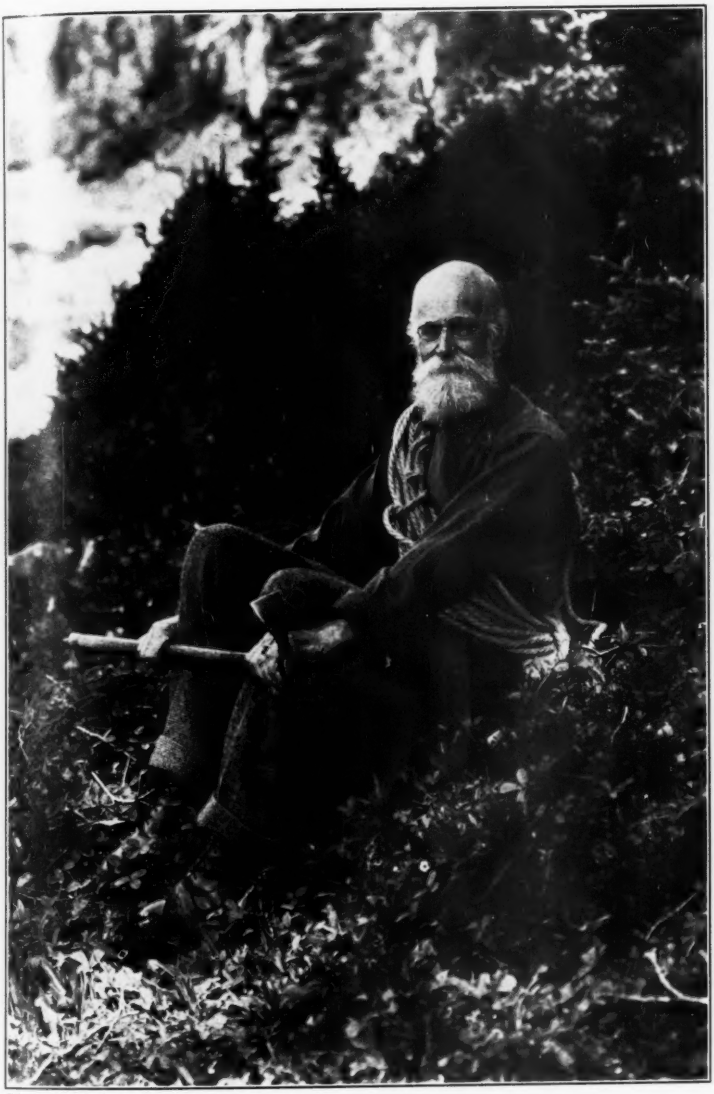


Photo: Pollard

PROFESSOR FAY

His year abroad included travel and study in France, Germany and Italy. In Florence he met Mary W. Lincoln, of Boston, to whom he was married after their return to America. In the spring of 1927, fifty-seven years later, he and Mrs. Fay revisited the city of the Arno.

Professor Fay occupied a position of high rank among American educators. In 1883 he helped to found the Modern Language Association of America and became for a time chairman of its pedagogical section. In 1885, acting as secretary of the Southern New England Association of Colleges, his remarks led to the creation of the New England Association of Colleges and Secondary Schools, of which he served for two terms, 1885-1887, as its first collegiate president. Later he became head of the New England Modern Language Association.

It is a trite remark that ripe scholarship is often the concomitant of first-rate alpinism. The names of Prof. Tyndall, Leslie Stephen and the present Pontiff, who in his youth climbed Monte Rosa, at once spring to mind. So it is not surprising that Professor Fay showed great interest and marked ability in alpinism.

One of the founders of the Appalachian Club in 1876, he served as its president in 1878, 1881, 1893 and 1905 and for forty years edited its journal, "Appalachia." In 1902 he helped organize the American Alpine Club, of which he was first president until 1909, and again from 1917 to 1920. Active as an editor of its publication, "Alpina Americana," he wrote for it a richly illustrated monograph, "The Rocky Mountains of Canada." His explorations of Alpine regions in Canada brought him recognition abroad as an honorary member of the Canadian, English, French and Italian Alpine Clubs and of the Centro Excursionista de Cataluna. A delegate to the International Congress of Alpine Clubs at Monaco in 1920, he was knighted by the reigning prince and made an officer of the Order of Saint Charles. In 1907 he represented the American Alpine Club and the Appalachian Mt. Club at the fiftieth anniversary of the Alpine Club in London.

His first ascents in Canada include Mts. Hector and Castor, 1895; Lefroy, Victoria, Gordon, Dome and Pollux, 1897; Niles, 1898; Dawson, 1899; Vaux, 1901; Goodsir, Daly and southeast arête of Eagle and Cathedral pass, 1903. In 1904 he climbed Temple (first by the southeast arête), and in 1913, Mt. Mumm. In 1904 he made the second ascent of Peak No. 1 of the Ten

Peaks, which overlooks Moraine Lake and which is named in his honor Mt. Fay. In 1910 he and his daughter ascended in one day four peaks of the Sandwich range in New Hampshire, Chocorua, Paugus, Passaconaway and Whiteface, covering ten thousand feet of ascent and eighteen miles of trail—in his 65th year.

Professor Fay had a wide diversity of interests. He was twice president of the Delta Chapter of Phi Beta Kappa, member of the Boston and Cambridge Shakespeare Clubs, the Boston Browning Society, Round Table, Friday Evening, American Folk Lore, Boston Deutsche Gesellschaft, New England Grenfell Relief Association, Metropolitan Improvement League and Massachusetts Forestry Association, Fellow of the American Academy of Arts and Sciences, the Buffalo Society of National Sciences, the Philadelphia Geographical Society and gold medalist of the Harvard Travelers' Club.

Last summer, in his 84th year, he walked very briskly from Maligne Lake to Medicine Lake, some twelve miles.

He passed away January 25th, 1931, in Phillips House, Boston, after an operation for appendicitis.

His contribution to the progress of America through his potent influence for sixty years upon his pupils and many friends, and as a great educator and a noble character, is hard to realize. His associates, both alpine and lay, bear ready witness to his great personal charm, youthful enthusiasm, kindly sympathy and superb physique.

HOWARD W. VERNON.

* * * * *

Advanced years had caused only a slight decline in Professor Fay's physical alertness and no diminution of his clearness of mind. The writer can speak from actual experience in August, 1930.

We met without pre-arrangement at Lake Louise, Alberta, where, with Mrs. Fay, he was spending a few days of an extensive tour through the southern and northern Canadian Rockies. Having learned that he was most desirous of visiting the Hut on the west side of Prospector's Valley, which had been named for him in 1927 by the Alpine Club of Canada, I suggested a trip up Tokumm Creek and a night at this cabin; to which he quickly assented,

adding that he wished to explore from there the large snow-field on the southeast side of the peaks of Moraine Lake.

We motored to Marble Canyon on a sultry day. My suggestion to ride up the creek was rejected, on the ground of a bad knee, which did not show itself in the professor's nimble gait, or in his jumping from log to log in order to cross and re-cross the stream. Only on the last and very steep part of the very imperfect trail leading up for 2,000 ft. from the valley to the hut, did he display any signs of fatigue, which was partly due to lack of condition.

After a short rest inside he came out looking fresh and eager, and put all kinds of questions to Edward Feuz, regarding the configuration of the snow-field, the streams flowing from it, changes in the names of the surrounding peaks, etc., etc., which taxed the guide's knowledge to answer. Great was his delight in having reached this spot; and he declared, that if this was to be his last excursion in the mountains, as he thought it might well be, he would be quite satisfied. It was his twenty-fifth trip to the Canadian Rockies, the attractions of which his facile and graceful pen had done much to extol and bring to the attention of both Americans and Canadians, ever since his guideless first ascent of Mt. Hector in the Lake Louise district in 1893.

After a sound sleep, disturbed only at the beginning by a rat hunt, which he enjoyed, Professor Fay was up next morning at 4 o'clock, looking ready for anything, but wisely put aside the thought of accompanying Feuz and myself on a climb. We joined up the same evening at Lake Louise, and next day he and Mrs. Fay departed for Jasper.

In Western Canada and particularly in the mountains, Professor Fay's visits had assumed the aspect of an important annual event. His activities covering a period of forty years had led to his being regarded as the dean of American mountaineers. He felt quite at home in Canada, where his animated humor, his good will and never-failing courtesy were highly appreciated and called forth the most sympathetic reactions. With the death of this unique mountain rambler, happily after a very brief illness, there has disappeared a fine and discriminating lover of nature and of his fellow men, one whose mind dwelt on the heights and whose outlook was international.

J. W. A. Hickson.

NEWMAN D. WAFFL
1879—1930

To us as climbers and followers of mountain paths, the passing of a friend and fellow member in a mountaineering accident comes as a double shock. To the sense of loss and of sorrow is added the feeling of horror that an adventure undertaken for sheer love of the grandeur of the high hills should have ended in tragedy.

Such were the feelings we experienced when news was received of the death on Mt. Robson, on August 5th last, of our friend and fellow member, Newman Diefendorf Waffl.

By vocation Mr. Waffl was a teacher and head master of Carteret Academy. By avocation he was a musician of profound musical scholarship, and a mountaineer of skill and long experience, deeply versed in mountain lore. A man of very unusual mental endowment and great mental and physical energy, he achieved eminence in whatever he undertook. He was fond of anything which provided a mental stimulus. To every undertaking he brought a keen intelligence, that made it an intellectual exercise, and an enthusiasm which made it a joy and an inspiration to be with him, whether at work or at play.

Mr. Waffl was born at Salt Springville, New York, on March 19, 1879. His early education was given him by his mother, and his preparation for college was done at the Cherry Valley High School. He graduated from Syracuse University in 1900 after having interrupted his college course for a year to serve as principal in his preparatory school. His M. A. and M. Ped. degrees were taken at Albany State Teacher's College in 1902.

As a teacher he was loved and respected by his students and won the enthusiastic support of the trustees of the school he did so much to develop, and on which it is felt he has left a permanent and uplifting influence. He was as modest and unassuming as he was able and learned, and few knew of the telling work he did in support of civic, religious and musical interests. His love of beauty found expression in his devotion to mountains, which amounted to a passion. A climber of great strength and skill who delighted to match his strength against the problems of the cliffs, he was also a mountaineer of wide knowledge and understanding. He climbed intellectually. Whatever may have been the immediate cause of his undoing, it is certain that it was not the result of rash or ill considered action.

He sleeps midst the high hills which he loved. No man could have a more fitting monument.

F. N. WATERMAN.

THE ACCIDENT ON MOUNT ROBSON

It is with deepest regret that we chronicle another mountaineering fatality—that of Mr. Newman D. Waffl, who was killed on Mt. Robson by an avalanche August 5th, 1930. Very little is known about the actual details of the disaster, since he was climbing alone. The following account (slightly condensed) we owe to the kindness of Mr. Frank N. Waterman who, as soon as news of the tragedy was received, journeyed from Maligne Lake to Berg Lake to render whatever assistance lay within his power.

Mr. Waffl had already, between July 1st and 7th, spent five nights on the mountain in company with Messrs. W. R. Hainsworth, M. M. Strumia and J. Lehman, in an attempt on the northwest ridge, which bad weather defeated. Much detailed reconnaissance had, however, been accomplished and Mr. Waffl had selected a route for another attempt which he described with exactness in letters to friends under dates of July 7th and 8th. These make clear that he fully realized the dangerous character of the mountain when loaded with snow or under adverse weather conditions.

The party left Mt. Robson and continued their climbing in the region south of Jasper, where first ascents were made of Mts. Christie, Belanger (34 hours), Mt. Maligne, five unnamed peaks (one took 23 hours), and an unsuccessful attempt on Brussels. Returning then to Jasper, Dr. Strumia, Mr. Hainsworth and Mr. Lehman went back to their homes. Mr. Waffl traveled up Portal Creek to Mt. Estella and accomplished a successful solo climb. He wrote a full and thrilling account of this adventure, but unfortunately the letter was accidentally destroyed. He compared Mt. Estella to the Dru and rated it as the best rock climb he had seen in Canada. Mr. Waterman writes:

"After some hesitation the decision was made to return to Mt. Robson and if possible secure Joseph Saladana or Arthur Allen to make the attempt with him or—failing that—to climb alone. He arrived at Robson Station on August 3rd and proceeded at once to Berg Lake. Unable to enlist either of the hoped-for companions,

he started at noon of August 4th from the foot of Berg Lake, where Roy Hargreaves landed him by boat. He told Hargreaves that he planned to climb as long as he could see and then bivouac until light again permitted an advance.

The night of the 4th was very warm, and the following day, Tuesday, proved excessively hot, so that heavy avalanching began. Mr. Hargreaves reports noting many, including three of exceptional violence, on that side of the mountain.

"Mr. Waffl had expressed his intention of returning on Tuesday evening, or at the latest, by Wednesday noon. He requested that a horse be sent to bring him across the river and back to Berg Lake at 9 P.M. on Tuesday.

"On Tuesday a camp was established by Dennison and Britton on the trail, above Emperor Falls, for Messrs. O'Brien and Underhill, who were expected on the following day. Mr. Hargreaves arranged with them to keep watch for any signs of Mr. Waffl.

"When he did not return by Wednesday noon, Mr. Hargreaves sent word to the B. C. Provincial Police that he was missing, and on Thursday, the 7th, he, with Joseph Saladana, made an extensive search of the lower slopes of the mountain. They found no trace.

"On Friday L. O'Brien and R. L. M. Underhill attempted the ascent of Mt. Robson by a ridge south of the northwest arête. They followed scratches and tracks which they presumed to be Mr. Waffl's, up to about 11,200 ft., where they lost them.

"Word of the disaster was not received at the A. C. C. Camp until Saturday, August 9th. The following morning the Fuhrer brothers, Hans and Henry, Swiss guides, left Maligne Lake for Mt. Robson Station. They made three searches. The first was fruitless. The second resulted in finding Mr. Waffl's windbreaker, uninjured, a torn silk bandanna, his badly torn rucksack, some torn underwear, and a bit of torn film. The third trip yielded further pieces evidently torn from underwear. All of these articles were found around the base of the avalanche fan.

"Another search by R. Hargreaves and J. Saladana on August 20th and 21st resulted in the discovery of Mr. Waffl's duxbak coat, the aluminum frame of a pair of snow glasses, and woolen gloves, on the rocks at the head of the avalanche fan. Mr. Waffl's body camera and ice-axe probably lodged higher up. His climbing rope was not found.

"On August 19th Messrs. Odell, Crawford and Moore arrived from Maligne Lake on an expedition of their own. They attempted the ascent of Mt. Robson on the 20th, by a ridge leading to the northwest arête. They found the rock heavily coated with ice and did not get very high. They had intended going out at once, but agreed to spend two days searching, and on the 22nd again examined the great snow fan. Dr. A. J. Gilmour and Miss H. I. Buck accompanied them. A deep well-like formation at the top of the slide and the rocks for a short distance above it were their particular objectives. These were thoroughly searched. No additional articles were found.

"After completing this undertaking Messrs. Odell, Crawford and Moore continued around the mountain and bivouacked at a considerable height above the 1924 Fly Camp of the A. C. C. On the 23rd they ascended the peak by the 1924 route, thus making the first guideless ascent. They searched the glacier above the upper and lower ice-falls as far as practicable, but found no traces of Mr. Waffl there, nor on the summit of the mountain.

"This ended the search. Two weeks of abnormally hot weather had greatly altered the condition of the mountain. All tracks had been obliterated. The rocks above the snow fan had been searched as far as was safe. Continued avalanching from the top ridge made it exceedingly dangerous to go far into their paths. There seemed to be nothing more that could be done. Reluctantly the search was abandoned.

"Mr. Waffl was a highly competent mountaineer, inherently cautious and of sound and well-trained judgment. In addition, he was a man of great strength and endurance, and at the time was in perfect trim after a long season of climbing. He knew his own capacities and he also knew Mt. Robson as thoroughly as it is possible to know a mountain in advance of the climb. All of the fixed factors had been carefully weighed, yet a tragedy resulted. The one factor which could not have been foreseen was the sudden change in weather which very likely would make moving even after sunset dangerous. It occasionally happens that it is much warmer high up than at lower levels on a mountain. Reports from the valley of frequent avalanching from the top ridge on the day of the climb lends further weight to the theory that an avalanche was the cause of the disaster."

BOOK REVIEWS

A Climber's Guide to the Rocky Mountains of Canada, by Howard Palmer and J. Monroe Thorington. Second edition. 1930. Pp. 244. John C. Winston & Co., Philadelphia. $3.25 postpaid. Obtainable from the secretary of the American Alpine Club, 50 Court Street, Brooklyn.

The Rocky Mountains of Canada cover an immense area and are not easily accessible at points away from the two transcontinental railways, yet the last thirty years have sufficed for parties equipped for exploration and climbing to cover almost the whole ground and, in addition, the Alberta-British Columbia Boundary Commission has published excellent maps of the main watershed, determining authoritatively the elevations of the neighboring mountains, so that the time is opportune for a summing up of our achievements as mountaineers. For this work no one is better equipped than the authors of *A Climber's Guide to the Rocky Mountains of Canada.* Few enthusiasts for our mountains have covered so much ground as they have, especially in regions difficult of access, and few have so many first ascents to their credit; and few indeed would have the patience to read the enormous mass of publications which has grown up in connection with the Canadian Rockies so as to collect the necessary data for the purpose of a guide-book.

The work has been performed with much care and excellent judgment and the reader finds concise references to more than six hundred peaks of 9,000 ft. or over strung out along 450 miles of the southern part of the Canadian Rockies. Farther to the northwest, so far as known, the range becomes lower and is of less interest to the climber.

The work is taken up from south to north and the peaks are divided into three groups, the first reaching from the International Boundary to the Kicking Horse pass on the Canadian Pacific Railway; the second from the Kicking Horse pass to the Yellowhead pass on the Canadian National Railway; and the third from this point to Jarvis pass toward the north, beyond which the mountains are less Alpine in character. The groups are further subdivided into twenty-eight sections, and each section has a brief introduction covering general features and explaining how the region may be reached. This is followed by a list of the peaks taken in alphabetical

order. The references to the different peaks are necessarily very condensed, but give the altitude, the position, the date of the first ascent and the names of the climbers. Suggestions as to routes of ascent are usually given, and in the case of important mountains more detailed accounts are supplied.

It is, of course, a book for reference rather than for continuous reading, but several of the introductions to the different sections give an excellent outline of the geographic relations, and also of historic discoveries and journeys through famous mountain passes, points of much interest to those who do not browse in old Alpine journals.

A glance through its pages shows many names of routes and peaks that recall vivid memories of toils and troubles, but also sometimes of joys and triumphs, in the breast of a man whose contests with mountain trails and mountain peaks ended almost a quarter of a century ago; but it is a delight to see how splendidly the men, and women, too, of a later generation are taking up the most heroic and unselfish of sports among the peaks and glaciers of the Rockies.

The *Climber's Guide to the Rocky Mountains of Canada*, compact in form so as to slip easily into the pocket, and yet very complete and up to date, should prove indispensable to the members of our Alpine Clubs and to all travelers who visit the Canadian Rockies.

A. P. COLEMAN.

The Kangchenjunga Adventure, by F. S. Smythe, Victor Gollancz, Ltd., London, England, 1930. 464 pp. and 48 plates. 16/s.

This brilliant book by the author of *Climbs and Ski-Runs* is the story of what looked like a forlorn enterprise from the outset. It is packed with historical matter, exciting incidents, important observations, suggestive comments and splendid descriptions of the scenery. The descriptions are supported by admirable pictures which combine climbing interest with artistic skill in composition. It would require a review of many pages to do even meagre justice to the richness of its contents.

Mr. Smythe was the most experienced Englishman in the international party from Germany, Austria, Switzerland and Great Britain, organized by Professor Dyhrenfurth (accompanied by his wife), who, at the age of 13 climbed the Rosengartenspitze in the Dolomites and has made over 700 ascents in the Alps and Hohe

Tatra. The expedition was the fourth attempt on Kangchenjunga (either the second or third highest known Himalayan peak), if one reckons the solitary, mad and fatal attempt of the young American, E. F. Farmer, as a serious attack. The year before, 1929, the Munich party under Dr. Paul Bauer, who has given a very lucid account of its achievement in the *Alpine Journal,* Vol. XLII, Nov., 1930, made a tremendously courageous attack on the mountain from the northeast side, reaching an altitude of 24,272 ft.: an attempt which has been described by the editor of the *Journal* as "a feat without parallel, perhaps, in all the annals of mountaineering."

Professor Dyhrenfurth's party was the first to approach the peak from the Nepal side. Since ponies and mules could be taken only a short distance of the way to the base camp, this entailed the employment of 400 porters, "some very good, some very bad," as against 100 employed on each of the three Everest expeditions. An enormous amount of food and other supplies had to be carried in. The author is critical of the clothing supplied to the expedition as being too heavy, especially the boots, and congratulated himself on having been equipped independently (pp. 60-63).

It was decided that the first attempt should be made from the Kangchenjunga glacier on the northwest side of the mountain. "To appreciate the beauty and dignity of Kangchenjunga, the apparently smooth, sickle-like sweep of its ridges, the pale red of its granite precipices, gleaming like a sun-caressed Devonian cliff through a blue Atlantic haze, it should be viewed with the naked eye." "But seen through a microscope; broken and jagged, torn and hewn by pale red precipices are resolved into fearful slices of unrelenting granite: the apparently smooth ridges resemble the blade of a knife seen through a microscope; broken and jagged, torn and hewn by wind and weather into edges, gaps and towers of fantastic and terrible beauty: what appears to the naked eye as straggling thin white threads are terrific ice-armoured couloirs, down which crash stones and ice avalanches from disintegrating cliffs of rock and ice" (p. 102).

We must pass over the chapters, "Through Tropical Sikkim," "The Kang La," in which a vivid description is given of the difficulties of crossing the pass 16,373 ft., and the splendid endurance of the porters, and "In Unknown Nepal," to come to the base camp, pitched at 16,500 ft. on the Kangchenjunga glacier, five miles from the west base of the peak. Opposite the camp, rising in one clean

sweep of 8,000 ft., was the "savage and brutal" Wedge Peak. The face of Kangchenjunga, on which Mr. Smythe thinks there is probably more snow precipitated yearly than on any other great Himalayan peak, and which among mountains stands for verticality, rose almost 10,000 ft. The plan was to reach its north ridge at the lowest point, the col between it and the Twins, and "then make our last camp somewhere on the upper of the three glacier-clad terraces, about 1,500 ft. beneath the summit under the final rock pyramid" (p. 201).[1]

After establishing two higher camps in the first week of May, No. 2, at about 20,000 ft., a better view of the northwest face was obtained, and it was seen to the dismay of Mr. Smythe, at least, that the only possibility of "climbing" the peak was over a clean-cut ice barrier, some 600 to 800 ft. in height, which ran for some three miles across the face, and under the north ridge. Above it towered huge masses of unstable pinnacles ready to fall, while débris lying around showed that they frequently toppled down. A staircase had to be cut in the steep and glue-like ice of its lower and most dangerous portions. Five days of exhausting labor, in which the author participated, during which the advance party was exposed to the greatest risks, brought them up only 500 ft. (Picture p. 242). Even with fixed ropes it seemed doubtful that laden porters could be got up to the terrace above, where it was proposed to establish Camp 3. Moreover, a fall of snow might easily isolate this camp from the others below.

Schneider "of boundless energy" and a most expert alpinist, and Hoerlin worked for another day on the ice-wall and decided that the terrace could be reached and the porters be brought up on the day following. Mr. Smythe spent a troubled and restless night and was in no condition to make a start; so he and the cook remained at Camp 2. Half an hour after the last of the party had left, he was startled by a terrific roar, and realizing that the noise came from the ice-wall dashed outside the tent. "An enormous portion of the ice-wall had collapsed. Hugh masses of ice, as high as cathedrals, were still toppling to destruction: billowy clouds of snow-spray were rushing upwards and outwards in the van of a huge avalanche. On the slope below was the party, mere black dots, strung out in a line . . . they were engulfed and blotted out

[1] For picture of proposed route see p. 202.

like insects beneath a tidal wave" (p. 253). Fortunately the avalanche stopped within 200 yards of the camp.

The author went up to the climbing party, of whom two were missing. But Schneider soon reappeared from the snow: the avalanche had missed him by a few feet. The only sacrifice was the fine porter, "Satan" Chettan. It was indeed an amazing escape.

A second attempt was made on the northwest ridge after Camp 1 was moved across the glacier near the Western Tributary glacier and to the foot of a rocky spur, where it was safer. From here, most of the party reached a point 20,800 ft. (separating the Ramthang Peak, 23,000 ft., from the northwest ridge of Kangchenjunga), after Wieland had climbed it alone. More difficult rock-climbing, in which Schneider and Wieland participated (pp. 278-282), showed the impossibility of proceeding further along this ridge or of establishing camps, even if the rocks could be surmounted. The idea of climbing Kangchenjunga was abandoned. The author regarded the prospect of getting any distance up the northwest ridge as utterly hopeless.

The expedition made, however, several notable first ascents: that of the Ramthang Peak, 23,000 ft. (see p. 290), which had suggested to previous explorers the name "Madonna Peak," owing to its sweeping slopes of snow and ice, and that of the Jonsong Peak, 24,344 ft. (twice), which although not a high altitude climbing record, is the highest summit yet reached (pp. 339-369).

In a suggestive and instructive chapter on "Lessons of the Expedition," in which high tribute is paid to Colonel Tobin, and two other British transport officers, without whom the expedition would have been a complete failure, and to Frau Dyhrenfurth, for her "management of the stores and supervision of communications, which were invaluable and could not have been excelled," Mr. Smythe discusses problems of photography in high altitudes, the clothing and feeding of climbers, ways of maintaining their health and the value of oxygen. The last should always be taken on a Himalayan expedition, he thinks, on account of its medicinal value; its inhalation being often more valuable than the taking of alcohol.

The expedition was not defeated by weather. It was defeated by sheer difficulties and dangers. Mr. Smythe agrees with Dr. Bauer's analysis that Kangchenjunga is a more formidable and dangerous proposition than Everest. All its sides have been explored and photographed: further reconnaissance, he holds, is unnecessary.

Time, he maintains, will always be an important factor. "Given sufficient time and weather of the right type, there is a remote probability that Kangchenjunga can be climbed by present-day methods. But does a sufficiently long enough spell of good weather *ever* occur on the mountain? Can men acclimatize themselves sufficiently to climb even moderately difficult rocks, and the upper rocks may be more than moderately difficult, between 27,000 and 28,000 ft.?" That is the question!

J. W. A. H.

Up and Down California in 1860-1864, the Journal of William H. Brewer. Edited by Francis P. Farquhar. Yale University Press, New Haven, 1930. Pp., 601; illustrations, 63; price, $6.00.

During the past century American mountaineers have keenly followed the early exploration of the Sierra Nevada range of California through the pages of Clarence King's *Mountaineering in the Sierra Nevada* and the *Yosemite Book* and other publications of the California Geological Survey of 1860-64. With the appearance of the journal of William H. Brewer we have, at last, the comprehensive and intimate narrative covering those four years of exploration. Far from duplicating earlier printed material, it provides a new perspective from which to enjoy the story of early California exploration and mountaineering. Its great wealth of detail and its easy flowing style make this new volume most entertaining to anyone who is the least interested in California of post gold-rush days.

With the formation of the California Geological Survey in 1860, William H. Brewer was chosen by the chief, Professor Josiah Dwight Whitney, as second in command. His professional attainments were not those of a geologist, but his broad training in many sciences and his wide practical experience made him invaluable as one of the leaders of the field expeditions. Brewer was not only capable but also industrious and meticulous in the matter of keeping written records. Besides recording the scientific and other official data of the expedition, he found time to carefully prepare a personal journal which was sent in serially numbered letters to his family in the East. It is fortunate indeed that these letters were preserved so that now at the end of more than half a century they can be combined to give us the intimate story of the explorations of the California Geological Survey.

The editor, Francis P. Farquhar, is particularly well qualified to undertake the task which he has so admirably completed. Widely known among mountaineers of America as an expert climber and as the editor of the Sierra Club Bulletin he has for years engaged in research in an effort to bring together all historical data relative to the mountains of California. It is due to his enthusiasm that the Brewer journals have been brought to light and added to the important literature on the history of California. Mr. Farquhar's careful arrangement of the material into chapters and into five books, one for each field season, and his well written introduction in which he presents a lucid picture of the times as well as a brief outline of Brewer's life, make it possible for the reader to thoroughly enjoy the content material in a manner which would be impossible were the journal presented in the usual diary form.

Certain chapters will be of special interest to mountaineers. The first of these is one which occurs in Book III and pictures the ascent of Mt. Shasta in 1862. While this was not the first ascent, it is nevertheless one of the most memorable. Shasta was reputed to be the highest mountain in the United States and only in the previous year had a barometer been taken to its summit. Measurements of the California Geological Survey fixed the height at 14,440 ft., a figure which closely approximates the later precise determination.

There follows a chapter in Book IV telling of the exploration of Yosemite and the Tuolumne Meadows region and of visits to the Calaveras Grove and other groups of giant sequoias. The party spent considerable time at the headwaters of the Tuolumne River, named Mt. Lyell, the highest point in what is now Yosemite National Park, and climbed to within 125 ft. of its summit.

The most fascinating chapters of all are perhaps those bearing the titles "The High Sierra of the Kings River" and "Owens Valley and the San Joaquin Sierra." Here we follow the expedition into the hitherto unknown southern Sierra Nevada, where they make the first ascent of Mt. Brewer, thinking it the highest peak in the range but discovering on the horizon beyond dozens of summits which seem to rise to altitudes of more than 14,000 ft. Realizing that one of these is probably the highest mountain in the United States, Clarence King and Richard Cotter leave the party and attempt to reach that goal. Although the mountain proves unattainable on account of the lack of supplies, they name it after their chief, Josiah Dwight

Whitney. This part of the Brewer journal is particularly fascinating if one can concurrently refer to King's delightful book which gives his youthful impressions of the same adventures.

Up and Down California is strongly recommended to mountaineers, particularly those interested in the exploration of the Sierra Nevada and early history of California.

ANSEL F. HALL.

Early Travelers in the Alps, by G. R. De Beer. Pp. xi+204, including bibliography and index. Illustrated with 40 plates and 36 text figures from old woodcuts and engravings. London: Sidgwick and Jackson, Ltd., 1931. Price 10/6.

The reader who enjoys the early history of his alpine playground will find many old friends between the covers of this book, and will place it on his library-shelf beside Francis Gribble's "*The Early Mountaineers.*" The writer, a Fellow of Merton, is enabled through an elastic title to include among his chosen characters many interesting personages who were by no means mountaineers but who enjoyed mountain wandering; and has excluded those who merely went across the Alps in the quickest possible fashion. In early chapters are described the political conditions in the Central Alps from 1512, by which time the present southern frontier of Switzerland was established (except that the Grisons then included Bormio, Valtelline and Chiavenna) until the time of the French Revolution.

Traveling in the sixteenth century brings us in contact with the earliest tourists, Conrad Gesner, Josiah Simler, Aegidius Tschudi, Johann Stumpf, Sebastian Münster and others. Humorous is the chapter dealing with therapeutic baths—where men might lounge "and refresh the mind as the women enter and leave the water," where many had no disease save that of love; and where those who felt an irresistible desire to sing in their bath had special license to do so provided the songs were holy or at least reputable.

The journeys of the first Englishmen, Thomas Coryate, Fynes Moryson, John Evelyn, John Ray and Bishop Burnet are followed by a chapter devoted to Dr. Scheuchzer and his dragons. The visit of Windham and Pococke to Chamonix is described *in extenso*, almost needlessly considering the ample treatment it has received in available modern texts. More interesting are the eighteenth century scientists: von Haller, Besson, Sulzer and the de Lucs; and that

admirable tourist, Archdeacon Coxe. The later chapters deal with Bourrit, with an entertaining outline of his wanderings outside the Chamonix valley; and with de Saussure, "who was keenly interested in everything he saw."

The author contends that modern photography does not produce illustrations as attractive as those which the early travelers have left in woodcuts and engravings, and amply justifies this by the number of reproductions (some of which are already in more than one anthology) with which his book is adorned. The collected pictures of the Grindelwald glaciers, and the Rhone glacier, are especially useful for comparative purposes.

J. M. T.

The Pioneer Photographer, by William H. Jackson, Yonkers, World Book Co., 1929. $1.40.

The author, the well-known photographer of the Hayden Survey in the Seventies, here gives us a different side of the picture from that published in the official reports. The old Geological and Geographical Survey of the Territories, to which we owe so much of our information of the mountain regions of Colorado and Wyoming and whose members made so many of the pioneer climbs in those states, is a subject about which little except dry official reports ever trickled out. Consequently this modest volume of 300 pages helps to give us a more intimate picture of the day-to-day work of the parties. The author, who took many hundreds of pictures, among others the first of the Yellowstone, tries to convey some of the difficulty of handling wet plates when each picture meant setting up a dark room on the spot, preparing the plate and developing it then and there. In these days of prepared films, and wholesale development months afterward, such troubles can scarcely be comprehended. Mr. Jackson describes the ascent of a number of peaks in Colorado and Wyoming. But perhaps of greatest interest to the modern climber are his remarks, on page 132, about Langford's and Stevenson's ascent of the Grand Teton. The book, although written primarily as a school text, deserves to be read by every one interested in the regions dealt with. An index renders it a ready book of reference. As an added attraction there is an account of the discovery of the Mesa Verde cliff-dwellings and a run-in with the Indians.

K. A. H.

Glacial Features of Jackson Hole, Wyoming, by Fritiof M. Fryxell. Rock Island, Ill. 1930. Augustana Library Publications, No. 13. $1.50.

This monograph deals with the glaciers which covered the famous Jackson Hole in ancient times. It describes the successive periods of glaciation and their effect upon the topography of the Hole. Three fairly definite glacial stages are recognized: the Buffalo, the Bull Lake and the Pinedale—names first adopted by Blackwelder in his comprehensive report on this area. The former extension of the glaciers and their influence upon the productiveness of the territory are shown quite clearly. Their erosion of the mountains of the Teton range is treated only incidentally. The explanation of some of the puzzling surface features the buttes, potholes, etc., will probably most appeal to the traveler and the climber, but we can recommend the book as a definite contribution to the literature on this fascinating corner of the Rockies.

K. A. H.

A Guide to Sequoia and General Grant National Parks, by Ansel F. Hall, chief naturalist of the National Park Service. Illustrated by Donald G. Kelly. National Parks Publishing House, Berkeley, California. 1930.

This attractive little book should be very useful to visitors to the Sequoia country. It contains a brief account of the history of these parks, simple but clear directions for finding one's way about the various trails, a large airplane map, and several smaller maps, many pen and ink sketches of plants and animals and odd bits of scenery. It is pocket size, well printed and has an attractive cover in color.

M. H. S.

Yosemite Valley, an Intimate Guide, by Ansel F. Hall, chief naturalist of the National Park Service. National Park Publishing House, Berkeley, California.

A similar book to the preceding, and a very comprehensive one. Any one digesting all the material offered by Mr. Hall will have a good knowledge of this most enchanting of valleys, so loved by Muir and Le Conte and all other visitors who have been so fortu-

nate as to enjoy its stately rock domes, its shimmering waterfalls, its gay flowers and bird life.

Mr. Hall, as chief naturalist, is well equipped to tell the story of the geological formation of Yosemite, its history, both Indian and white, its flora and fauna. He not only gives full directions for finding all the trails and points of interest, but he stops to tell you how to distinguish the sugar pine from the yellow one, where to look for the water ouzel, and when to listen for the song of the Carolina wren. The charming little sketches by Leo Zellensky add much to the interest of the text and there is a good bibliography at the end.

As a guide-book, however, it is at times a bit too discursive, the printing leaves much to be desired, and there are only three maps and these are all of the pictograph variety. Aside from this it is a handy volume that should be of much value to a Yosemite visitor, and one that he would enjoy rereading after his visit is a thing of the past.

M. H. S.

Encyclopedia Britannica, 14th Edition, 1929.

The following notes make record primarily of topographical errors and discrepancies found in certain topic headings dealing with the mountains of North America. In general, a lack of editorial uniformity is noted, as well as the frequent use of obsolete data, especially in respect to altitudes.

ALASKA—The following mountains are mentioned by name: Crillon, Fairweather, Vancouver, Wrangell, St. Elias, Logan, McKinley, Foraker. The first three of these are stated to be "over 15,000 ft.," whereas Mt. Crillon is only 12,727, according to the triangulation of the Alaska Boundary Commission. Mt. Wrangell, actually about 14,000 ft., is credited with 17,500. The figures 18,024 and 19,539, which are given for Mts. St. Elias and Logan, should be superseded by the Boundary Commission altitudes of 18,008 and 19,850. The statement that Mt. St. Elias is "in the Nutzotin mountains" is puzzling and must be a mistake.

The Coast range is dismissed with the statement that it "is characterized by the uniformity of summit levels between 5,000 and 6,000 ft." Surely this is an inadequate description of a rugged range containing several summits over 10,000 ft. and a great num-

ber between 7,000 and 10,000 ft., including such spectacular peaks as Kate's Needle and the remarkable granitic spires of the Devil's Paw and the Devil's Thumb. This range may yet be found to contain some of the most difficult climbing peaks in North America.

The two most notable glaciers in Alaska are said to be the Malaspina and the Muir.

The question of nomenclature of the Alaskan ranges is always an interesting one. The article under review favors the extension of the term "St. Elias range" to include "not only the mountains between Cross Sound and Mt. St. Elias but the Chugach, Wrangell and Nutzotin mountains." It is true that the division between some of these ranges is ill-defined, notably between the St. Elias range proper and the Chugach mountains, to a lesser degree between the St. Elias and Wrangell ranges. But by the same token the Coast range proper merges with the southeastern end of the St. Elias range around the head of Glacier Bay and the Lynn Canal, and the Talkeetna, Kenai and Chigmit mountains are but indistinctly divided from the Chugach and Wrangell ranges in the west. As a matter of fact, the whole southern coast line of Alaska is lined by an almost continuous mountain system, of which the various named ranges are part. There is need for a more precise nomenclature, but can this need be met by merely extending the term "St. Elias range" to include territory more and more remote from Mt. St. Elias itself? The "Coast range" would be a better generic term, and has actually sometimes been so used.

British Columbia—This unsigned article retains the obsolete elevation for Mt. Robson (13,068 instead of 12,972) and states that Mt. Alberta is 13,500 ft. high instead of 11,874 as surveyed. Mt. Fairweather is given as 15,287 instead of the Boundary Commission figure, 15,399. The big unclimbed peak in the coast range, Mt. Waddington, is called Mt. George Dawson, but is accorded the correct elevation. No mention is made of any of the interior ranges (Selkirks, etc.).

Canada—The section dealing with the mountains is ably handled by Dr. A. P. Coleman. Few specific elevations are mentioned. Those of Mt. St. Elias and Mt. McKinley are rounded off to 18,000 and 20,000 ft., respectively, a procedure which might create an unjustified presumption of uncertainty in the case of the latter. The accepted height of 20,300 appears to be well-founded.

SELKIRK MOUNTAINS—A brief and inadequate article. "Their outline is rounder and less serrated than that of the Rockies. . . . They do not rise much above 10,000 ft." The Selkirks contain 40 peaks above 10,000 ft., four of which rise above 11,000 ft.

CANADIAN ROCKIES—Also a short and quite insufficient article. It gives Mt. Robson a height of 12,975 ft. (possibly misprint for 12,972) and speaks of all the other Canadian ranges (including even the Coast range) as "adjoining groups."

A. C.

Bradford on Mt. Fairweather, by Bradford Washburn. Putnam's, 1930. Pp. ix, 127; 31 photos, 3 sketch maps. $1.75.

This book for boys, detailing the experiences of a band of youthful adventurers on the skirts of Mt. Fairweather, may be noticed here on account of current interest in this giant of the Alaskan wilderness. It is the story of a month's arduous back-packing in relays from Lituya Bay over glaciers that bound the westerly base of the mountain. While older heads must shake dubiously at the sheer audacity of these young neophytes, they will accord unstinted praise for manful perseverance in the face of heavy odds, both of weather and terrain. Although a height of about 6700 feet was attained on a westerly spur, no real attempt to climb the mountain was made. One discovers a number of errors due to superficial acquaintance with earlier work and literature. The historic "Grand Plateau Glacier" is called throughout *"Great* Plateau Glacier," and the original connotation of the name is considerably extended. The book is well illustrated, one picture by the U. S. F. S. Aerial Survey being particularly informative.

Edward W. D. Holway: A Pioneer of the Canadian Alps, by Howard Palmer. University of Minnesota Press, Minneapolis, Minn., 1931. Pp. ix, 81. Map and 8 illustrations. $1.50.

Mountaineers will find in this little volume the authentic account of the ascents in the Canadian Rockies and Selkirks which made the name of E. W. D. Holway so well known to the climbing fraternity not many years ago. Readers who may never have seen a mountain will enjoy the book simply as the true tale of a remarkable man who

gave up commercial pursuits to become a professor of botany and an explorer of little-known Alpine ranges.

The book is composed largely of Mr. Holway's intimate letters and diaries which tell his story with an engaging touch that continually makes light of the dangers, difficulties and hardships inseparable from pioneer work. The trials and tribulations of "back-packing" are graphically portrayed by the author. The book was designed to cover, as a part of a well-rounded biography, the mountaineering experiences of its subject. We think that the task has been well done and commend the work to the attention of readers interested in the Canadian Alps.

Mr. Palmer's book, with an introduction by the late Professor J. Arthur Harris, former head of the Department of Botany at the University of Minnesota, is enriched with illustrations of many of the peaks referred to in the text. It is very well printed and attractive in format.

NEW EXPEDITIONS

The Middle Palisade—First Ascent From the North

One of the noblest peaks of the Sierra Nevada is the Middle Palisade. From the south it presents a couloir-furrowed rampart surmounted by numerous serrate pinnacles; from the north it is even more imposing when viewed either from the deep gorge of Big Pine Creek or from nearby mountains. Among California mountaineers it enjoys the distinction of being one of the most difficult peaks in the range. Until the past summer all of the few ascents made had been up the south face, and the opinion was current that the summit was in all probability inaccessible from the north, that side having an appearance of forbidding sheerness.

For several seasons the writer had surveyed this formidable front of the mountain, speculating as to whether it might not be scaled. But partly on account of its negative aspect and partly on account of the difficulty of access to it (there being nothing more than a suggestion of a trail in the gorge of Big Pine Creek and none whatever in the upper basin), I had indefinitely deferred any attempt on the mountain from this direction. Early last June, however, I decided to make the venture.

Leaving a lodge at an elevation of some 8,000 ft. above sea-level, I knapsacked up to a lake at 10,500 ft. and there made camp. The following morning I began to trudge up a steep slope to the south of the lake and in the direction of the Middle Palisade. Soon I came upon a long, narrow and remarkably straight lake, shut in by

steep bluffs and still mostly frozen over. After flanking it, I made a "diagonal" up snow-clad slopes to the southwest. Presently, however, I began to pay the penalty of a late start by breaking through the snow-crust, sometimes to my knees.

Upon coming within full view of the Middle Palisade towering high above the glacier at its base, I paused for a few minutes to study it. The highest point lay apparently about midway along the jagged summit ridge and below it an arête descended between two couloirs, eventually terminating in a buttress above the glacier. All along the base of the mountain ran a steep wall several hundred feet high and in most places evidently unscalable. However, at the end of the buttress and on either side, north of a couloir above the initial cliff, it looked favorable. At first sight the most vulnerable, but not the most advisable, point, as developed later, was a snow-fan directly to the right of the buttress.

Having made these observations, I trudged at a wide angle across the glacier to the foot of the snow-fan and then up its steep acclivity. When part way up, I began to realize the danger of a snow-slide falling on me from the upper couloir, as the sun was shining directly on snow lodged on the steep face of the peak above. The fan had obviously been formed by such slides, but being averse to returning, I continued upwards. Near the top I came upon a frailly-bridged bergschrund, usually the only crevasse of consequence in Sierran glaciers. Crossing, however, to the left, I began to make my way up a wide chimney ending in a notch on the upper rim of the cliff, apparently the only feasible route at that point, although forming the path of occasional snow-slides. Nevertheless, I proceeded, picking my way along the sides of the chimney when possible, but at times cutting steps up its ice-covered floor. Having surmounted the cliff, I walked a few rods to a mass of sedimentary material imbedded in the prevailing granite, and while examining it, a fragment of ice struck the back of my neck. I turned around and saw a snow-slide perhaps fifty yards in length, swishing along the couloir and pouring over the notch through which I had just come.

The couloir obviously being dangerous, I scrambled up to the arête bounding it on the south. Although occasionally obstructed with loose snow, this afforded excellent and only moderately difficult climbing. The sun shone from a sky of purest blue, and the silence of the mountainside was broken only by the notes of rosy finches as they darted by, and once by a clatter of falling rocks in a nearby couloir. Near the top of the mountain the masses of snow became larger and more frequent, some of them obliging me to feel my way along with the ice-axe. Occasionally I flanked them by detouring towards the bottom of the couloir to my right or by contouring along shelves on the more precipitous drop to the left. Just below the crest, a heap of snow larger than usual was encountered. Partly by floundering through it, partly by going

Photo. N. Clyde

VIEW W. FROM TOP OF MIDDLE PALISADE

W. Peak in foreground. In distance Mt. Sill (right); North Palisade (left).

around it, I got above and hoisted myself to the top where, somewhat to my surprise, I found myself facing the cairn erected on the highest point of the mountain, 14,049 ft. above sea-level.

The narrow knife-edge, with a sheer drop on west and south and a very precipitous one in the face which I had scaled, combined to render the summit a rather thrilling eyrie. The sharp west peak of the Middle Palisade across a great chasm in the summit arête, the broad-faced pyramid of Mt. Sill, the Gothic spires of the North Palisade and beyond the latter to the right, the ruggedly symmetrical peaks of Mts. Winchell and Agassiz, formed an assemblage of superb mountains capable of arousing enthusiasm in the most blasé. The eye followed the axis of the range for over a hundred miles—from Mts. Whitney and Williamson in the south to Mts. Ritter and Lyell in the north.

As the wind rumbled in the couloir on the south face and blew strongly across the summit, I took shelter in a little coign east of the crest. There I remained for half an hour lunching and watching the rosy finches playing about the rocks, apparently enjoying the mountain tops as much as do mountaineers.

In the descent I followed the crest of the same arête as much as possible. It was without incident until I neared the brink of the cliff above the glacier. In view of the morning's experience, I was not especially eager to descend to the snow-fan. After a pause, I decided to continue over the arête to the margin of the cliff with the hope that it would afford a route down to the glacier. This came to pass, and I was soon standing beside the bergschrund. I hesitated to make a leap, but eventually I shot across, alighting on firm footing. Continuing, I again encountered the schrund beyond a rocky projection, but cleared it with a bound and proceeded then northward across the glacier. I plodded through soft snow for a while, but finally indulged in a long glissade to a basin not far from the south end of the long, narrow lake encountered in the morning. Not relishing the prospect of climbing over the bluffs enclosing the lake, I walked across the ice and although it was somewhat rotten, gained the farther end, without experiencing anything worse than a pair of wet feet. Hastening down the declivity beyond, I soon arrived at the lake where my camp lay. The ascent had been a most excellent one. Later in the season, with less snow on the face and particularly in the couloirs, very little risk would be run by competent climbers. It ranks among the finest rock-climbs available in the Sierra Nevada.

Second Peak, Middle Palisade—First Ascent From the North

A route having been found up the north face of the culminating peak of the Middle Palisade, there remained the desirability of discovering one up the second highest summit northwest of the first,

13,956 ft. in elevation. Although its sheer north face manifestly precluded any such direct escalade as had been found possible before, appearances favored a try up a steep snow-filled couloir just west of the peak and a traverse from the notch at the top eastward over the arête to the summit.

Accordingly, leaving camp at an early hour, I proceeded westward across an undulating terrain of glaciated granite, sparsely scattered over with lodgepole pine, rounded a long spur projecting northward from the Middle Palisade and began to ascend the stream issuing from a glacier at the foot of the desired peak. The latter stood in fine perspective at the head of an alpine gorge, its base obscured in dark shadows, but the summit glowing in bright sunshine—a truly magnificent sight.

After going through another narrow passage, I reached the terminus of the glacier and crossed it towards the couloir west of the peak. The snow being firm, such good progress was made that I was soon at the schrund near the foot of the chute. Crossing without difficulty, I began steadily to ascend the snowy couloir, being able in most places to kick in sufficiently to support my weight. When near the notch, I suddenly swung onto the rock-wall to the left and with some little difficulty succeeded in gaining the crest of the summit-arête. To my disappointment, however, I found the arête so deeply gashed and the cliffs on either side so sheer, that it did not seem feasible to continue to the top of the mountain. At first sight also it did not look possible to descend the cliff below me on the north. More careful scrutiny, however, disclosed a way down for some two hundred feet, after which a traverse eastward along the face of the mountain, across the head of a large couloir and around a shoulder, might bring one within striking distance of the summit.

The descent proved rather thrilling, but with the exercise of care, not very hazardous. It lay down steep pitches, short chimneys, and along narrow shelves. The traverse, turning out to be easy, I soon reached the couloir, crossed it and swung around the shoulder beyond. Then passing over a strip of steeply-pitching snow and rounding a buttress, I found myself looking up a Y-shaped couloir with a peak at the terminus of either branch, the more easterly being manifestly the higher. It took only a few minutes to descend into the chute and follow shelves along the left wall of the right branch to the final arête where a quick scramble brought one to the summit. This consisted of two sharp points. one overlooking the north face which dropped away sheerly for many hundreds of feet. East of the top, the arête broke away abruptly in a great gash; southward, after shelving down for perhaps two hundred feet it fell away perpendicularly to the base of the mountain. The view of the highest peak of the Middle Palisade rising in stark crags across the great intervening gap, and that of the commanding, spire-like peaks of the other Palisades to the northwest was very

striking. There being no cairn present, apparently there had been no previous ascent.

Within an hour I was on the return trip following the route of ascent to a point near where I had descended the face of the cliff. Here I ventured on a variation of the former line. As I ascended the holds became so few and the angle so steep that I feared I might be getting into an embarrassing cul-de-sac, should I be unable to reach the crest, or if neither it nor the other side should prove negotiable. In case of an enforced return, the holds were so rounded that a rope could not be looped over them. However the crest was attained in safety and apparently it could be followed westward and the north face opposite also be descended. Choosing the latter, all went well for a while, but presently difficulties arose. The steeply-tilted rocks and short chimneys held loose snow underlain with ice, and the angle was so steep that if one's footing gave way, he might not stop, short of the base of the mountain. But being unwilling to return to the crest and start anew, I headed in a diagonal direction westward towards the large couloir which I had ascended earlier in the day. When almost up to it, I came upon a fifty-foot drop but with the aid of the rope got down. This proved to be the last impediment, however, for by hitching the rope to a protruding rock, I reached the margin of the couloir.

Once off the treacherous face of the mountain, I sped down the chute in a long glissade. Upon nearing the schrund, I steered toward a bridge and shot over it. Difficulties and dangers past, I hastened over the glacier, glissading wherever possible. As I came within sight of the lake, near camp, the moon emerging above a mountain to the east, lighted up the summits of the Middle Palisade. With some gratification I gazed at the steep front of the highest peak, up which a new route had been discovered, and at the second highest trodden for the first time by human foot, after a thrilling and somewhat hazardous climb.

NORMAN CLYDE.

THE NORTH PALISADE—FIRST ASCENT OF SECOND HIGHEST PEAK

To the lover of mountain scenery or the scaler of mountain peaks, the North Palisade is one of the most intriguing eminences of the Sierra Nevada. Rising in almost sheer walls to the north and the south, it is surmounted by several great pinnacles, the loftiest 14,254 ft. in elevation, the second highest approximately 14,000 ft.

While making a number of ascents of the first, I frequently gazed toward its somewhat lower neighborhood several hundred yards to the northwest, wondering whether it, too, might not be scaled. The actual summit is a tapering monolith upwards of thirty feet in height which promised to demand arduous gymnastics

to surmount it. Last summer, however, I suddenly decided to make the attempt.

Leaving camp at the Big Pine Lakes (about 11,000 ft.) one morning in early July, I descended to a meadow gay with a profusion of flowering bryanthus, cyclamen, arnica, asters, wild hellebore and other flowers common to such locations. Passing this I followed a trail leading southward to the North Palisade glacier somewhat over two miles distant. Continuing across the latter, perhaps a mile in width, I headed for a steep wall to the west of two snow-filled couloirs about midway along the face of the mountain.

At the bergschrund some difficulty was experienced, as it was open along the base of the wall. But I managed to cross it at the right of the more westerly of the two couloirs. Above for some five hundred feet the rocks are very precipitous, but as I had already surmounted them in scaling the highest peak,[1] I knew that they would offer little trouble.

At the top of a wide, shallow couloir, I clambered out onto the buttress to the left. After going directly to the southwest for perhaps two hundred feet, I zigzagged back and forth up the face along a series of rounded shelves. Above these I veered to the west in the direction of the second peak. Although a couloir led from the northeast toward its summit, direct access to the former was prevented by a sheer drop of considerable height. It seemed possible, however, that the wall to the right of it could be scaled and the chute entered above the drop. Upon arriving at its base, I began to climb it, finding it negotiable, but feeling that a few more holds distributed here and there would be very convenient. When about thirty feet up the face, after testing a rock, I commenced to pull myself up, but the rock moved with my weight. Not relishing a fall to the bottom of the cliff with the stone on top of me, I let go and slid down the face, the rock springing back into place as soon as relieved of the strain. Fortunately my slide was arrested within a few feet by a shelf. After scrambling up to the rock again, I shoved it down, thereby making a much desired hold.

After scaling the wall for some distance, I came to a narrow, steep chimney up which I squirmed to the crest of a knife-edge. After a few rods of this I continued along shelves on the right wall of the couloir with interesting but only moderately difficult rock-work. Having arrived at the head of the chute, I clambered out of it to find the summit-monolith only a few rods distant. But I was not so pleased to note that a thunder-cloud was bearing down upon the mountain from the west. Haste was imperative if I was to conquer the slender spire before it became a lightning rod.

After changing from nailed to rubber-soled shoes, I began to scramble up the granite pinnacle, carrying a hundred-foot rope.

[1] See *A. A. J.*, No. 2, p. 186, and views. Route in present paper follows same couloir on right side and then directly up face of right-hand peak, which is the second highest.—Ed.

Sheer on three sides, on the fourth a steep slope led about half way up. Here I walked with little difficulty until my head was only a few feet from the summit, but then a weather-polished bulge directly in front stopped me. Failing to hoist myself over the protuberance, I attempted futilely to lasso the top. At length I managed to loop the rope around the uppermost portion of the rock and to tie it to my waist so as to prevent a fall of more than a few feet, should I happen to slip. The protruding bulge and the smooth surface rendered the short scramble a strenuous one, but eventually I pulled myself to the top, a mere wedge several feet in length and one in width. Being in fact the slender culmination of a great pinnacle falling away precipitously on every side, it was an extremely airy perch.

By now, however, the thunder cloud was only a few minutes away so I hastily dropped down to the base of the monolith. Here I snapped a photograph, pulled down the rope, built a small cairn, picked up my nailed shoes and without waiting to put them on, began to desecnd the couloir up which I had come. Presently I was involved in whirling snow and a violent wind, but the electrical accompaniment did not prove as severe as had been anticipated.

Continuing along the side of the chute and over the arête. I came to the head of the chimney. In it and on the wall below it I used the rope continually. At the foot of the latter I crept into a niche which afforded partial shelter from the wind and driving snow, and ate a hasty luncheon. Instead of descending the lower wall with its wet slippery holds, I swung to the right and entered the couloir. Except for the cutting of steps for some distance in steep ice, and some maneuvering in getting across the schrund at the base of the couloir, this was accomplished without incident.

With the bergschrund safely crossed, I made a swift glissade down the snow-fan below. Soon the sky was clear again and the westerning sun shone upon the craggy summits of the Palisades, and a few lingering cumulus clouds. With some elation I gazed upward at the topmost spire of the second highest crag of the North Palisade, attained for the first time by human effort.

NORMAN CLYDE.

TEEPE'S PILLAR, TETON RANGE, FIRST ASCENT

Messrs. K. A. Henderson and R. L. M. Underhill made the first ascent of this peak on July 18th, 1930. Leaving camp at Amphitheatre Lake at 5.30 A.M., the usual route to the Teton glacier was followed and the left arm of the glacier ascended to the col at its head. There is some danger from stonefall here and the rocks to the right, ascending, should be followed as most of the stones come from the rotten rock on the other side of the glacier. The col leads onto Teepe's glacier and from there a route was taken to the left, to strike the rocks at their lowest point, on the

east side of the peak. Nailed boots were left there and sneakers used for the rest of the climb. Commencing at 8:15 abrupt slabs were followed for several hundred feet into a chimney and under an overhang. The overhang was surmounted to the left, the leader being assisted by the second man. Another smaller overhang a hundred feet higher was surmounted to the left without any difficulty. The way then led onto the south or southeast face up which it zigzagged, the easiest way being chosen. The final bit was up the southwest ridge to the summit, which was reached at 10.10. The descent, which took an hour and a half, was made by the same route. The proper chimney at the start may be recognized by the black rock of the overhang and its apparent impossibility. There is also some wet grass just beneath the overhang. A very interesting climb, reasonably difficult.

Canadian Rocky Mountains

(1) Yoho-Waputik Group

St. Nicholas Peak, 9616 ft. First ascent, June 27. J. M. Thorington, *P. Kaufmann*. From Bow Lake by way of the snowfield above the southern Bow glacier, and the east face, 4 hours. Descent of south arête and traverse to north peak of Mt. Olive, 10,270 ft. Return to intervening col and descent to snowfield and Bow Lake.

Mt. Ayesha, 10,036 ft. First ascent, July 15. E. Cromwell, J. M. Thorington, *P. Kaufmann*. From Bow Lake by way of Bow glacier and south shoulder of Mt. Rhondda, which is crossed and a couloir descended to the snowfield below east face of objective peak. Ascent of south shoulder, followed by 300 ft. of rock climbing on east side of summit cap direct to top. Ascent, 8 hours, 20 minutes. Descent to Twin Falls (Yoho valley) 5 hours, 20 minutes.

(2) Pipestone Group

Dolomite Peak, 9828 ft. First ascent, June 30. J. M. Thorington, *P. Kaufmann*. From Bow Lake by way of rock slides and meadows across a high shoulder to the foot of Dolomite pass. The fourth tower, counting from the north, is the highest point. The head of the valley is rounded to a point on the west slope between the third and fourth towers. A rib and a long, narrow snow-couloir form the line of ascent to the depression between these towers. The highest tower then requires a traverse on its face until a snowy cleft, immediately north of the highest point is reached. Bow Lake to foot of Dolomite pass, 3 hours 30 minutes. Descent to Bow Lake, 4 hours, 30 minutes.

(3) Freshfield Group

Watershed Peak North of Pangman Peak, 9600 ft. This is the highest point between Pangman Peak and Bush pass. First ascent, July 5. E. Cromwell, J. M. Thorington, D. Duncan, A.

Megrew, *P. Kaufmann.* From Freshfield tongue by way of Niverville meadow and Pangman glacier. Summit attained from south col. Freshfield tongue to summit, 5 hours, 45 minutes.

MT. SKENE, 10,100 ft. First ascent, July 7. A. Megrew, D. Duncan, E. Cromwell, J. M. Thorington, *P. Kaufmann.* From Freshfield glacier by way of broad couloir between Mt. Skene and Strahan. Thence ascend snow slopes. Ascent from camp, 4 hours, 30 minutes.

MT. STRAHAN, 9960 ft. First ascent, July 7. D. Duncan, A. Megrew. From Skene-Strahan col by way of southwest shale arête, 1 hour, 15 minutes. Direct descent to Freshfield glacier, 50 minutes.

MT. CONWAY, 10,170 ft. First ascent, July 7. E. Cromwell, J. M. Thorington, *P. Kaufmann.* From Skene-Strahan col by way of Conway snowfield and lateral glacier of west flank to south rock arête. Several difficult steps are then ascended in reaching the summit. Descent by west ridge to a prominent tower, where a gully leads down to the snowfield. From Skene-Strahan col to summit of Mt. Conway, 4 hours, 15 minutes. Total time from camp for Mts. Skene and Conway, 15 hours, 30 minutes.

MT. BARLOW, 10,320 ft. First ascent, July 9. E. Cromwell, J. M. Thorington, *P. Kaufmann.* From camp on Niverville meadow by way of Freshfield basin to col between Mts. Helmer and Barlow. The lower west peak was skirted on its south slope as the higher east point was gained. Ascent, 5 hours.

MT. LOW, 10,075 ft. First ascent, July 9. E. Cromwell, J. M. Thorington, *P. Kaufmann.* From the summit of Mt. Barlow in 1 hour and 10 minutes, following the watershed. Direct descent to the basin and return to Freshfield tongue, 5 hours, 30 minutes.

(4) Forbes-Lyell Group

MT. FORBES, 11,902 ft. First ascent of north ridge, July 12. E. Cromwell, *P. Kaufmann.* From bivouac on left bank of Mons glacier. Ascended north glacier to the saddle at foot of ridge, which was found to be steep and heavily corniced. One gendarme gave considerable trouble. Ascent, 7 hours, 30 minutes. Descent to camp, via west ridge, 5 hours, 40 minutes.[1]

MT. CAMBRAI, 10,290 ft. First ascent, July 15. D. Duncan, A. Megrew. From bivouac above Mons glacier by way of Mons snowfield, 4 hours, 20 minutes.

MT. MESSINES, 10,290 ft. First ascent, July 15. D. Duncan, A. Megrew. Following ascent of Mt. Cambrai.

MT. ST. JULIEN, 10,140 ft. First ascent, July 15. D. Duncan, A. Megrew. Following ascent of Mt. Messines.

[1] Mr. O. E. Cromwell reports that the north arête of Mt. Forbes was a sensational snow climb comparable to the Bionnassay-Dôme du Goûter ridge of Mont Blanc. It was very steep and they had to pass over huge cornices. It is only possible at all when the condition of the snow is exactly right. One gendarme proved very difficult. On the west face the snow was so precipitous that one could not walk on it.—Ed. *A. A. J.*

Purcell Range

(1) Dutch Creek Group

Mt. Findlay, 10,786 ft. First ascent, July 24. E. Cromwell, J. M. Thorington, *C. Kain, P. Kaufmann.* From camp at head of Dutch Creek by way of Trikootenay glacier and pass to head of Findlay creek. The peak is reach by traversing the crevassed east snow-slopes above the glacier and ascending the granite blocks in the upper portion of the east arête. Ascent, 9 hrs. Descent, 5 hours, 15 minutes.

Saffron Peak, 10,018 ft. First ascent, July 27. E. Cromwell, J. M. Thorington, *P. Kaufmann.* From camp at the head of Dutch Creek by way of low, timbered saddle on south side of subsidiary east peak. The south arête of the main peak is attained and followed to the summit. Ascent, 5 hours, 15 minutes. Descent, 3 hours.

(2) Bugaboo Group

Pigeon Spire, approximately 10,200 ft. First ascent, August 6. E. Cromwell, *P. Kaufmann.* From camp at head of Bugaboo Creek, to plateau of Bugaboo glacier, thence up moraine to foot of Snowpatch Spire. Ascended glacier north of Snowpatch Spire to col between it and Bugaboo Spire, crossed neve to the south ridge of Pigeon Spire, and followed it to a vertical pitch, traversing on the northwest face to the north ridge five minutes below summit. Descended by same route to glacier, and returned to camp via southwest arm and main stream of Bugaboo glacier. Ascent, 7 hours, 30 minutes. Descent, 3 hours, 35 minutes.

Center Peak, approximately 9600 ft. First ascent, August 10. E. Cromwell, *P. Kaufmann, C. Kain.* From camp at head of Bugaboo glacier, to plateau of Bugaboo glacier, thence via moraine crest to foot of Snowpatch Spire. Crossed southwest arm of Bugaboo glacier to saddle in north ridge, which was followed to summit. Ascent, 7 hours, 45 minutes. Descent, 4 hours.

Thimble Peak, approximately 10,000 ft. First ascent, August 11. E. Cromwell, *P. Kaufmann.* From camp at head of Bugaboo Creek, via Bugaboo glacier and south arm, to col between Thimble and Howser Peak. Ascended east ridge to summit. Descended west ridge to col between Thimble and Flat Top. Ascent, 4 hours, 20 minutes. Descent, 20 minutes.

Flat Top Peak, approximately 10,000 ft. First ascent, August 11. E. Cromwell, *P. Kaufmann.* From col, followed east ridge to summit. Ascent, 1 hour. Descent, via west ridge to glacier and camp, 2 hours.

O. E. Cromwell.

VARIOUS NOTES

Mountaineer Passes of the Yoho-Waputik Group

The first explorer of the Yoho valley was Jean Habel who, in 1897, required seventeen days to reach its head. In the same year, it is of interest to recall, the Wapta icefield was reached by the large party that made the first ascent of Mt. Gordon, their route from Bow Lake, at that time, being shorter and easier.

The irregular but connected névés of the Yoho-Waputik group, on and near the main watershed, cover an area approximating forty-five square miles. Balfour pass is the division point between the southern Waputik field and the northern Wapta field.

In the Rockies, because so much climbing has been done from the Alberta side, mountaineer-passes or cols have been utilized more as routes to adjacent peaks than as depressions to be crossed in the true alpine sense of a traverse. Permanent camps in the Yoho valley, affording shelter on the western side of the watershed, make this an exception to the general rule. The Lake Louise mountains are similarly favored by the O'Hara camp, the Abbot and Wenkchemna-Opabin routes crossing the main watershed.

But in the Yoho region, on account of flatter topography, there is a larger group of passes which it is the purpose of the present paper to enumerate and describe. Not all of them are useful at this time; a few have not even been crossed; all are glacial. They are as follows:

I. *Niles Pass* (8,200 ft.). Pacific watershed. Immediately west of Mt. Niles. Sherbrooke Lake to Daly glacier and Waputik névé. Useful from Sherbrooke Lake in ascents of Mts. Niles, Daly and Balfour. Descent may be made from Daly glacier to Takakkaw camp by rocky slopes about a quarter of a mile south of the great waterfall to the stringers (1930) of a bridge across Yoho River.

This is an old route, used in 1898 by R. Campbell, R. F. Curtis and C. E. Fay in their attempts on Mt. Balfour. The Niles-Daly col (3,700 ft.) was also reached in this year.

App. viii, 328; Outram, 283.

II. *Emerald Pass* (9,000 ft.). Pacific watershed. Between Mts. Marpole and President. Emerald Lake to Kiwetinok Creek. Either peak may be ascended.

First crossed in 1901 by E. Whymper and *C. Klucker*, from Little Yoho *en route* to Field.

Outram, 204.

III. *President Pass* (9,300 ft.). Pacific watershed. Between Mts. President and Vice-President. Emerald Lake to Little Yoho. Either peak may be ascended from the saddle.

Reached in 1901 by J. Outram, *C. Kaufmann* and *J. Pollinger*.

Outram, 207.

IV. *Kiwetinok Pass* (8,450 ft.). Pacific watershed. Between Kiwetinok peak and Mt. Kerr. Little Yoho to Kiwetinok Creek.

First crossed in 1901 by E. Whymper, T. Wilson and *C. Klucker*, from Little Yoho to Field in seventeen hours.

App. x, 85; Outram, 201.

V. *Balfour Pass* (8,250 ft.). Atlantic-Pacific watershed. Between Mts. Olive and Balfour. Yoho valley to Hector Lake. A pass from which Mts. Gordon and Olive may be ascended; useful in connection with Vulture col (which see) as a route to Bow Lake.

In 1901 this pass was crossed by J. Outram, *C. Kaufmann* and *J. Pollinger*, from Yoho glacier to Hector Lake and Lake Louise in twelve hours.

App. x, 87; Outram, 230.

VI. *Vulture Col* (9,600 ft.). Pacific watershed. Between Mts. Gordon and Olive, either peak being readily accessible. Wapta névé to Balfour pass. Links with the western slope of Balfour pass as a route from Bow Lake to Yoho valley. The summit of the col, seen from the north, presents a curious rock formation resembling a vulture on its nest.

The first crossing was apparently that of 1910 by B. S. Darling, T. G. Longstaff, A. O. Wheeler, E. O. Wheeler and *C. Kain*, from Bow Lake to Yoho valley. The summit of the pass was reached from the north in 1898 by H. P. Nichols, C. L. Noyes and C. S. Thompson, from Peyto Lake, the party returning and descending to Bow Lake.

C. A. J., iii, 164.

VII. *St. Nicholas-Olive Col* (9,400 ft.). Atlantic-Pacific watershed. Bow glacier to Wapta névé.

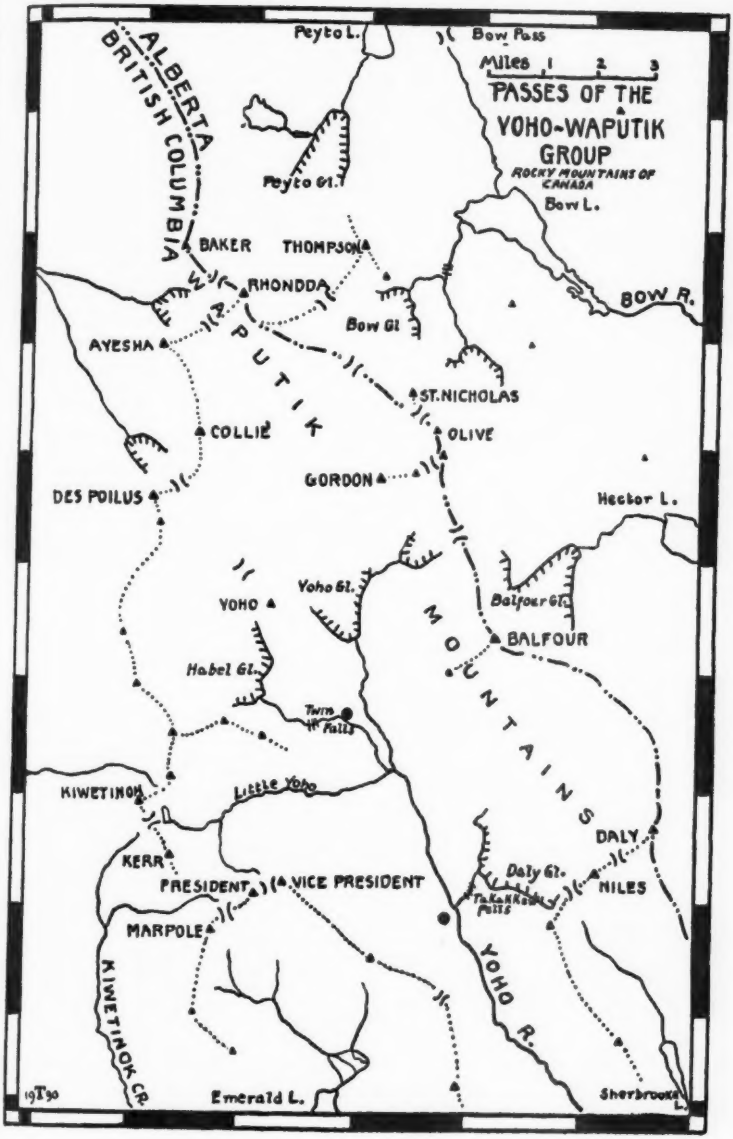
The crest was reached from the east in 1930 by J. M. Thorington and *P. Kaufmann,* in traversing from St. Nicholas Peak to the north summit of Mt. Olive. Its western side was examined in 1923 by W. S. Ladd, J. M. Thorington and *C. Kain* in ascending Mt. Gordon, in the course of a traverse from Bow Lake to Yoho River via Vulture col.

It presents no difficulty on either side and, with Vulture col and the western slope of Balfour pass, appears to offer the shortest route from Bow Lake to Yoho River.

VIII. *Rhondda-Olive Col* (8,900 ft.). Atlantic-Pacific watershed. Bow Lake to Yoho valley. May be used as a high-level link with Vulture col and Balfour pass to Yoho River; or with the Collie-Yoho pass to Twin Falls cabin.

By this route from Bow Lake in 1897 the Wapta névé was first reached, on the first ascent of Mt. Gordon, by G. P. Baker, J. N. Collie, H. B. Dixon, C. E. Fay, A. Michael, C. L. Noyes, H. C. Parker, C. S. Thompson and *P. Sarbach.*

Collie, 28; Outram, 282.


PASSES OF THE
YOHO-WAPUTIK
GROUP
ROCKY MOUNTAINS OF CANADA
Miles 0 1 2 3
ALBERTA
BRITISH COLUMBIA
Peyto L.
Bow Pass
Peyto Gl.
Bow L.
BAKER
THOMPSON
RHONDDA
BOW R.
Bow Gl
WAPUTIK
AYESHA
ST. NICHOLAS
COLLIE
OLIVE
GORDON
DES POILUS
Hector L.
Yoho Gl.
YOHO
Balfour Gl.
BALFOUR
MOUNTAINS
Habel Gl.
Twin Falls
KIWETINOK
Little Yoho
DALY
KERR
Daly Gl.
PRESIDENT
VICE PRESIDENT
NILES
Takakkaw Falls
MARPOLE
YOHO R.
KIWETINOK CR.
Emerald L.
Sherbrooke L.
1930

IX. *Thompson-Rhondda Col* (8,800 ft.). Atlantic watershed. Peyto glacier to Bow glacier.

Though seldom visited this pass is a part of an old route, crossed in 1898 by the guideless party of H. P. Nichols, C. L. Noyes and C. S. Thompson, when they ascended Peyto glacier and proceeded as far as Vulture col in search of Mt. Balfour. Not finding a route to Hector Lake they returned and descended to Bow Lake.

Outram, 295.

X. *Baker-Rhondda Col* (9,200 ft.). Atlantic-Pacific watershed. The usefulness of this pass is questionable, although it would afford a route from Peyto glacier to Blaeberry River. The Wapta névé rises on its eastern slope, while on the west there are beds of shale leading down to the snowfield at the northeast base of Mt. Ayesha.

Its crest was reached in 1928 from Peyto glacier by A. Geoffrion, J. W. A. Hickson and *E. Feuz, Jr.*, in making the first ascent of Mt. Rhondda.

C. A. J., xiv, 8.

XI. *Ayesha-Rhondda Col* (8,600 ft.). Pacific watershed. Wapta névé to Blaeberry River. With the Baker-Rhondda and the Collie-Habel cols this obvious pass slopes on the west to an unnamed branch of Blaeberry River, and might conceivably (in the future) become part of a mountaineering route from the Yoho valley to the Freshfield group. There is no difficulty in descending Ayesha glacier, but the Blaeberry forests are not attractive in their absence of trails.

The south side of this pass was reached in 1930 by O. E. Cromwell, J. M. Thorington and *P. Kaufmann*, on the first ascent of Mt. Ayesha.

XII. *Collie-Habel Col* (9,000 ft.). Pacific watershed. Wapta névé to Blaeberry River. The western glacier descends steeply and this col has no utility at the present time. There is no record of any crossing. It might possibly serve as a route from Amiskwi (Baker) pass, by way of the Ensign station, to Twin Falls cabin.

XIII. *Collie-Yoho Col* (9,000 ft.). Pacific watershed. This is the lowest depression of the high snow plateau between the heads of Yoho and Habel glaciers. It links with the Rhondda-Olive col across the main watershed as the best route from Bow Lake to Twin Falls cabin.

It was crossed in 1926 by M. M. Strumia, J. M. Thorington and *E. Feuz, Jr.*, in ascending Mt. Collie, from Bow Lake to Twin Falls and Takakkaw camp; and again in 1930 by O. E. Cromwell, J. M. Thorington and *P. Kaufmann*, on the ascent of Mt. Ayesha, from Bow Lake to Takakkaw. Under good conditions this route, without the ascent of a peak, requires about twelve hours.

A. J., 234, 70.

Thus far we have considered only passes south of Mt. Baker. The Waputik mountains extend northward into the angle between Mistaya and Howse Rivers, terminal branches of the North Saskatchewan, the northern outpost of the group being Mt. Sarbach. In this section the range is narrower, and the following depressions in the watershed may be mentioned:

XIV. *Baker-Trapper Col* (9,300 ft.). Atlantic-Pacific watershed, between Mt. Baker and Trapper peak. An untried route connecting Peyto and Baker glaciers. Possibly a better route to Blaeberry River than the Baker-Rhondda depression.

XV. *Breaker-Parapet Col* (8,100 ft.). Atlantic-Pacific watershed. Between Mt. Breaker and an unnamed peak of the watershed northwest of Mt. Barbette. Capricorn glacier to Parapet creek. Probably reached from the western side in 1917 when the Interprovincial Survey ascended Mt. Breaker. An untried route, apparently a feasible connection between Mistaya Lake and Blaeberry River. The pass is the lowest crossing of the main watershed within the group under discussion.

XVI. *Breaker-Ebon Col* (8,800 ft.). Atlantic-Pacific watershed. Between Mt. Breaker and Ebon Peak. Capricorn glacier to Ebon Creek. An untried route offering a possible crossing from Mistaya Lake to Blaeberry River.

North of Howse Peak the peaks within the angle between Mistaya and Howse River have not been completely mapped. It would be of advantage if a short cut could be found from the Wildfowl Lakes to Howse pass, and a route may be discovered somewhere between Mts. Chephren and Kaufmann.

Emphasis should be laid on the fact that it is unwise to attempt long traverses across the Wapta or other high névés except in settled conditions. In bad weather the way can be easily lost; in soft snow one may have a repetition of the experience of the party of H. P. Nichols, C. L. Noyes, C. S. Thompson and G. M. Weed in their attempt on Mt. Collie from Bow Lake in 1898. (Outram, 224.)

In any case, before attempting a crossing, it will increase one's topographical knowledge to ascend one of the high peaks of the upper Yoho, such as Mt. des Poilus (*Habel*). The foregoing notes indicate the difficulty of discovering the exact locations of the various passes across this complex snowfield.

No mention is made of direct descent of Yoho glacier. This, of course, is possible from any route that brings one to the portals between Yoho Peak and Mt. Gordon, but the retreat of the Yoho tongue and the existence of the Twin Falls cabin are two reasons for giving preference to Habel glacier as the route of choice. In view of the retreat of the Yoho tongue it is well to arrange for horses as an aid in crossing Yoho River if it is desired to use Balfour pass.

The presence of cabins at Bow Lake, and of good trail down Bow River to Lake Louise, place these high-level routes within the reach of mountaineers without the necessity of elaborate outfit. During the past three years fire-warden's cabins have been built in the following locations: Nine Mile (from Lake Louise), Mosquito Creek (between Hector and Bow Lakes), Bow pass, upper Wildfowl Lake, Saskatchewan forks. The cabins are equipped with telephone. From Bow pass the trail northward is on the east side of Mistaya River. In 1928 a wooden bridge was built across the canyon, at the base of Mt. Murchison and the ford between the Wildfowl Lakes to the base of Mt. Chephren has fallen into disuse.

There is no trail on the shores of Mistaya Lake, and the party which made the first ascent of Mt. Patterson used a raft. There are still a number of unclimbed peaks in this section, which, together with the possibility of working out new routes across the range, make the northern Waputiks an attractive field for mountaineers.

J. Monroe Thorington.

The Freshfield and Lyell Glaciers, Canadian Rocky Mountains, 1930

Freshfield Glacier

The Freshfield glacier, source of Howse River, a terminal branch of the North Saskatchewan, was first measured in 1922 by Howard Palmer, assisted by the writer; and again by the writer in 1926 and 1930.[1]

The measurements in 1930 were all made on July 4, and no additional time could be given to the matter during the course of a mountaineering expedition.

Measurement of Surface Velocity

The line A-B between two morainal stations was re-established and direct measurements made with steel tape upstream to the Great Boulder. Its distance above the line was 620 ft., as compared with 1,046 ft. in 1926 and 1,551 ft. in 1922. Fig. 1.

The distance between the Great Boulder and the Glacial Erratic marked "1922" was 429 ft., as compared with 440 ft. in 1926.

In the interval from 1926 to 1930 the Great Boulder advanced 426 ft., an average daily motion of 3.5 inches, as compared with 4.1 inches for the four years preceding. Fig. 2.

[1] Smithsonian Misc. Coll., vol. 76, n. 11; vol. 78, n. 6; Journ. Geol., xxxii, 1924, p. 434. Messrs. O. E. Cromwell and A. F. Megrew assisted the writer with the Freshfield measurements in 1930.

Fig. 1. Looking toward Mt. Forbes from the summit of Mt. Skene. The Freshfield glacier is seen a mile below, the position of the Great Boulder being shown by two arrows. Note the dirt-bands, and the lateral moraine uncovered by melting ice.

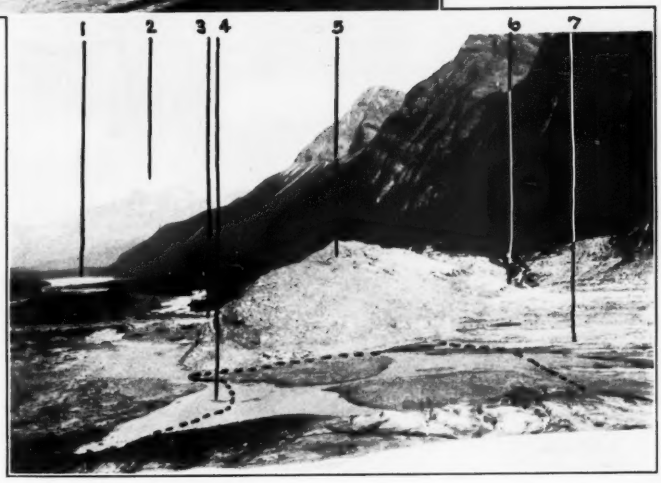


Fig. 3. Looking downstream from the Lyell glacier. (1) Glacier Lake. (2) Mt. Murchison. (3) Emergence of clear stream. (4) Stream from Lyell glacier. (5) Lake Moraine station. (6) Clear stream entering cleft of Lake Moraine station. (7) Stream from Mons glacier. Dotted line shows approximate outline of Lyell tongue in 1926.

The numbered stones set out on the line A-B in 1922, and rediscovered in 1926, were not seen during the course of several traverses of the glacier.

Retreat of the Tongue

The marked stone H, in contact with the ice in 1922, is now 583 ft. from the extremity of the tongue. The lateral abutment of the terminal ice against bed-rock, marked in 1926, is now 253 ft. from the ice-front. Retreat during the period 1926-30 of 253 ft. is to be compared with 330 ft. for the period 1922-26.

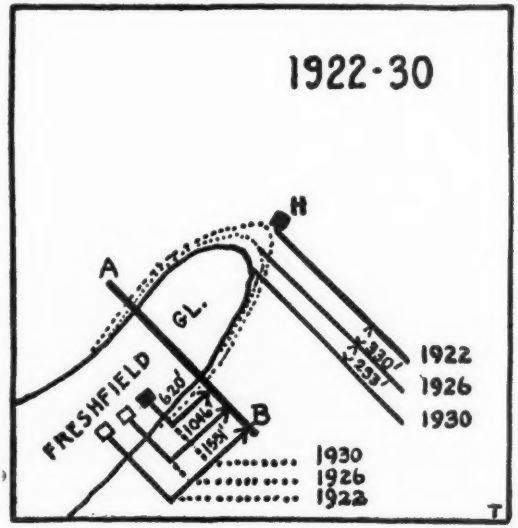


Fig. 2. Diagram of Freshfield glacier, showing retreat of tongue and advance of Great Boulder since 1922.

A bed of avalanche snow across the northwesterly angle of the tongue prevented marking the 1930 morainal contact, but a conspicuous boulder on the gravel flat was inscribed with the numerals '30.

Summary

The Freshfield glacier continues in its cycle of retreat, but the retreat of the tongue as well as the daily motion of the Great Boulder are less for the period 1926-30 than for the period 1922-26. This is to be explained by the vertical shrinkage of the tongue, with consequent decrease in the mass and inertia of the glacier.

Lyell Glacier

The Lyell glacier was described by Dr. Hector, of the Palliser expedition, in 1858; and observations were made by Charles D. Walcott in 1919, as well as by the writer in 1926 and 1930.[8]

In 1926 the stream from Mons glacier ran along the western margin of the rock promontory, Lake Moraine, the stream flowing between the rock and the ice to join the Lyell torrent, the combined

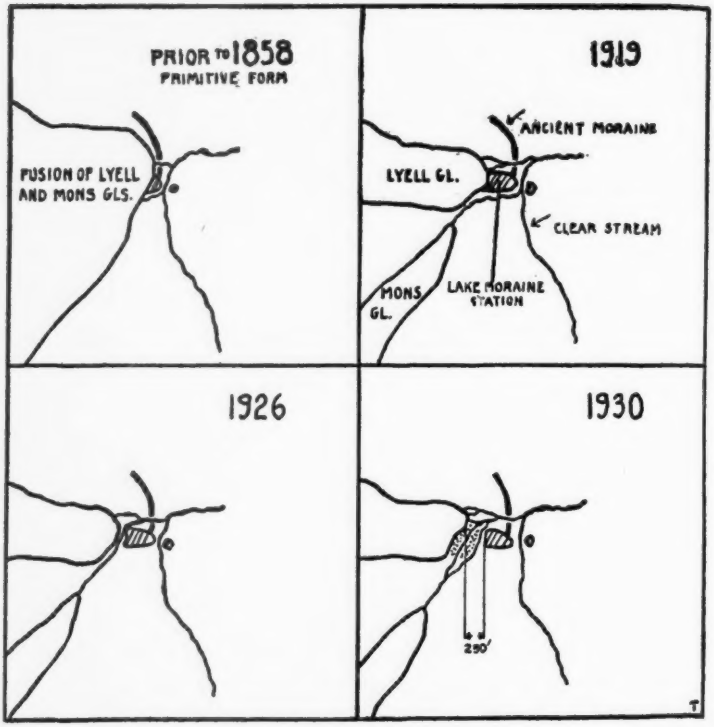


Fig. 4. Diagrams of Lyell glacier showing alterations of stream flow.

stream flowing across the ice-front and eroding it. This was not the case in 1919, when Walcott reported that all of the water from the Mons glacier passed out through the cleft on the south and east of Lake Moraine station.

Since 1926 the melting and erosion have progressed, the ice exhibiting a retreat of 250 ft. and uncovering a level expanse of

[8] Smithsonian Misc. Coll., vol. 72, n. 1; vol. 78, n. 6.

fine boggy silt which has been cut into small islands by the Mons stream. On July 12, 1930, the silt was so saturated with water that virtually no footing could be obtained. The only marking that could be accomplished consisted in erecting a small cairn on a prominent boulder projecting and in contact with the terminal ice. Fig. 3.

The retreat during the past four years has averaged 60 ft. per year, contrasted with the estimated retreat of 15 ft. per year, based on the descriptions of Hector and Walcott.

It is now possible to show diagramatically the alterations which the retreat of the ice has made in the terminal streams, and the converse action of stream erosion which became prominent soon after Walcott's visit in 1919, when the Mons stream secured its new channel between Lake Moraine and the ice-front. Fig. 4.

Summary

The Lyell ice-front, during the period 1926-30, presented a more rapid rate of retreat than during any recorded period preceding. This is attributable, in part, to erosion by water.

J. Monroe Thorington.

Two Relief Maps of the Canadian Rockies

It is stated (*Encyclopedia Britannica*) that the first tridimensional maps were made by the Incas of Peru. The name "relief" was not applied until a much later time, but probably always has expressed the topographer's feelings when the work was completed.

More than twenty-five years ago the Canadian artist, Mr. F. M. Bell-Smith,[1] made sculptured reliefs of the mountains adjacent to the Canadian Pacific Railroad, which were familiar to travelers and climbers at the hotels of Lake Louise, Field and Glacier.

During 1928-30 I constructed two reliefs of portions of the Canadian Rocky Mountains for the American Alpine Club. The first of these covers the region adjacent to Athabaska pass, from Wood River to Fraser and Athabaska sources.[2] The second includes the mountainous area adjoining Howse pass and includes the upper drainages of the North Saskatchewan and Bush Rivers. These are the first reliefs to be made of the country along these two historic routes across the Continental Divide, the work having been made possible by the excellent maps of the Alberta-British Columbia Boundary Commission.

The making of reliefs is carried on by the Topographical Survey of Canada, one of the Banff section being especially interesting. Their method is to cut the 100 ft. contours from thin cardboard,

[1] "An Artist's Reminiscences," *C. A. J.*, ix., 90.

[2] A labelled photograph of this relief appeared in *C. A. J.*, xvii, 17.

and build up the resulting levels; thereby producing an extremely accurate result. This technique is, however, laborious and expensive, and as a somewhat reduced vertical scale is used (presumably to avoid cutting thick cardboard for the sections), the completed model had a flat effect not altogether pleasing to the mountaineer.

The method which I have adopted is simpler, less expensive, somewhat less accurate, but satisfactory to exhibit general topographical relations. The maps of the Boundary Commission are on a scale of one mile to the inch (1:62,500). Having decided to cut sections upon the contours of 500 ft. interval, I had poured for me a series of plates, each 3 mm. in thickness, sufficiently large to cover the lowest contour of the relief. The plates are composed of a mixture of beeswax and resin, with a melting point of 95° F.[3] Calculating 25 mm. equal to one inch, it will be seen that when eight of these plates are superimposed it is equivalent to 4000 ft. of vertical height. This means about 1.25 inches to the vertical mile, an exaggeration of elevation which produces peaks of elegant line. No one will begrudge this concession to the vanity of the climber.

To begin the work, a basal wax-plate is placed on a board and the map laid on top of it. Long pins are pushed through the summit locations of every principal peak and are forced through the wax into the board. The pin-heads are then cut off with a wire-cutter, leaving the shanks projecting. These pins serve as registration points in orienting the plates which follow. The map is then carefully lifted off.

Next the map is placed on another wax-plate and the locations of the principal peaks pricked through with a pin. Then, with a dull pencil, the lowest contour is followed throughout its entirety. When the map is lifted off, the impression of the contour is visible on the plate and is easily cut out with a small scalpel, warmed in a flame. A similar procedure is gone through with each succeeding 500 ft. contour, the cut plates being superimposed on the preceding ones and aligned on the localization pins.

When nearing the 7,000 ft. contour the massif usually begins to break up into "islands," demanding greater care in the registration and orientation. The mountains now appear as a series of rising step-formations, with the general topography and angle of slope plainly evident. After all of the contours have been cut and mounted, plastolene is smoothed into the steps and all excess rubbed away with the finger-tips. When this is properly done the upper contour-edges of the wax-plates should barely project through, leaving the

[3] Such plates can usually be obtained through the larger biological institutions, where they are used in the reconstruction of embryos from microscopic serial-sections. The plates can be poured in any thickness desired. The cost of all material for the Freshfield-Lyell relief (wax-plates, casting and case) was less than fifty dollars. The time required in making the relief (exclusive of casting)—which includes the northern half of Boundary Sheet 17, all of Sheets 18 and 19, and the southern half of Sheet 20—was approximately sixty hours.

contouring just visible. Next, the plastolene is modeled upward over the summit-block of each peak, carefully following the angle of slope. The localizing pins are then cut off flush with each summit, and there is usually no difficulty in recognizing a given peak by its shape when compared with photographs from different sides.

The completed model is now cast in plaster; any professional will do this for a small sum. I have the plaster made in a terra-cotta tone, and a layer of chicken-wire and burlap sunk into the base to strengthen it.

The cast is then ready for painting. The snowfields and glaciers are drawn in with Chinese white, their extent being taken from the map and applied to the contours of the model. The rivers are drawn in with a hard blue pencil, and the timber stippled with green opaque water-color to its proper height. Photographs are here of considerable service. The peaks are given appropriate tones and the Continental watershed drawn on with ink. The model is sprayed with several coats of varnish, and legend numbers are attached in suitable locations. An orientation mark of the cardinal points of the compass should be made on the model itself. An explanatory legend is mounted with the relief in its case, the cast being attached to the base-board by brass hooks. A small-scale map, with inked outlines showing the extent of the relief in relation to the surrounding area, may be added. An improved effect is produced by painting the inner lateral walls of the case a sky-blue.

The making of such a relief is a great lesson in topography and impresses one with details not easily learned in any other manner. For the observer, a model visualizes the relations of complicated mountain groups much more easily than a flat map. One can trace old routes and work out new ones. Indeed, if one makes use of such a relief in preparing for an expedition, it may save great loss of time in the field by ruling out at once certain lines of approach that otherwise might be discarded only after bitter experience of trial and error.

J. Monroe Thorington.

A Mountaineer's Route to the Summit of Mt. Whitney

The completion of the new trail to the top of Mt. Whitney, which enables almost anyone who can ride a horse to reach it, together with the fact that this mountain is the highest in the United States proper, intrigue the mountaineer with a desire to find a real climbing route to the summit. It appears that it can be ascended by the northwestern shoulder, no difficulty being apparent except possibly a stretch of rather steeply-shelving rock best negotiated with rubber-soled shoes. The north face, consisting of very wide, shallow couloirs separated by low ribs can be readily scaled. Early

in the season it would involve a good deal of snow and some ice-work; later the use of rubber soles on the steeply shelving pitches.

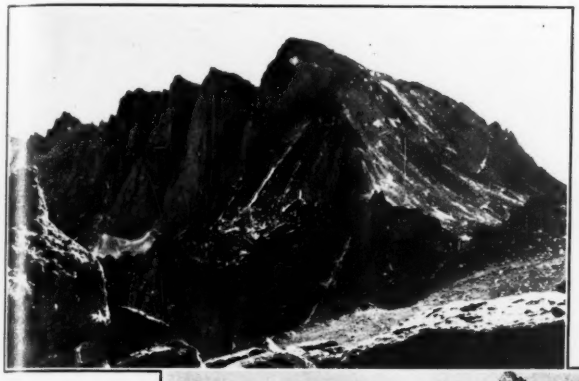
The numerous steep chimneys extending northward from Mt. Muir to Mt. Whitney are probably unscalable—or only with great hazard—at least those nearest the latter. During the past summer a rather ill-considered attempt on the part of a youth, to climb the one immediately to the south of the summit, resulted in a lamentable fatality. However, to the north of the peak a fairly steep couloir rises from the east to a notch in an arête extending northward from the summit. This chute affords interesting but only moderately difficult rock-work. Early in the summer it is likely to contain a good deal of snow. The angle is not too steep to preclude glissading on the descent, should the snow be in proper condition. Upon reaching the notch, the route swings around a buttress and up the north face. Here, too, a good deal of snow is likely to be encountered early in the season. This portion of the ascent also is only of moderate difficulty and is about five hundred feet in length.

To reach the base of the chimney, one must either leave the trail at Mirror Lake, an elevation of some 10,500 ft. above sea-level, or at Consultation Lake, about 1,500 ft. higher, and go respectively northwest or north to a pass on a ridge extending eastward from Mt. Whitney. Either route entails not only the crossing of the ridge but also the traversing of a basin beyond it, filled with rough talus.

A much more interesting route, although one necessitating a somewhat arduous knapsack trip, is to leave the trail at about 9,000 ft. elevation—about 800 above Hunters' Flat and proceed directly westward up the gorge of the North Fork of Lone Pine Creek. Although the bottom of the canyon can be followed, a more adventurous and perhaps easier way can be found by swinging to the left around the buttress, up a steep gulch coming in from the south. After climbing over several hundred feet of broken rocks, a crevice about fifty feet in length can be seen running up a rather steep granite pitch to the right. This can be scaled without great difficulty, although it is best to remove one's pack and haul it up at the end of a rope.

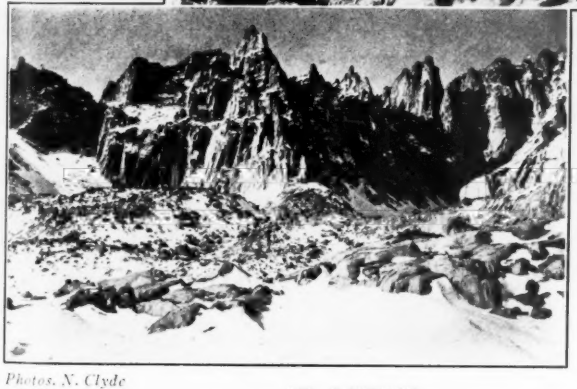
At the upper end of the crack, one encounters a shelf going westward along the face of the cliff. Ordinarily this can be followed with comparative ease, to its western termination, a distance of about a half mile, but at seasons other than midsummer the presence of snow and ice may render it difficult, if not dangerous.

Above the shelf, the route swings across a strip of loose rock to a glacial basin in which there is a grove of foxtail pine, at an elevation of some 10,000 ft. This is a good place to camp, but one can ascend to the next basin, about 500 ft. higher, and bivouac in it, although late in the season there is no water in the grove of foxtail pines—the most desirable camping spot. To circumvent the steep drop above the basin, several routes are available. The most



In Autumn from N. E.

From the Upper North Fork. Route described lies up right-hand ridge.



Route lies up ridge in foreground (center).

Photos. N. Clyde

MT. WHITNEY

obvious is one across a talus-covered slope to the left. Better than this, however, are two leading up the north side. The first of these leads up the most conspicuous chimney, to the right of the sheer wall, for several hundred feet, and then diagonals to the left across a broad, apron-like shelving strip of glaciated granite pitching rather steeply to the southeast. This is easily traversed in rubber-soled shoes and can be negotiated with nailed ones.

Upon reaching the basin, all routes converge toward a projection running eastward from Mt. Whitney. It has the appearance of a point almost directly west of the basin and slightly to the south of the summit of Mt. Whitney, then in plain view. At the base of this, one has the choice between scaling the point and thus obtaining an interesting rock climb or of swinging to the south of it and following the base of the cliff westward for a quarter of a mile until a place is reached where the latter can easily be climbed. Both routes emerge in a shallow basin containing a lake and with Mt. Whitney and the desired chimney directly to the west.

To make the trip comfortably, it would require a half-day to knapsack from the base of the Sierra; a day for the climb and a day for the return. However, as other good climbs—including Mt. Russell, 14,190 ft. in altitude and several other unnamed peaks—are available from this base camp, the stay might be prolonged for a number of days. Both the trip up the canyon of the North Fork and the ascent of Mt. Whitney by this route still possess the spice of novelty as but few have ever done either.

NORMAN CLYDE.

MOUNTAINEERING NOTES FROM THE GRAND TETON NATIONAL PARK

Easily the most noteworthy of the five ascents of the Grand Teton (13,747 ft.) made during the first season of the park (1929) was that via the east ridge, on July 22, by Kenneth A. Henderson and Robert L. M. Underhill, who thus were first to demonstrate that the summit can be attained by a route other than the traditional one established in 1898. (*A. A. J.*, Vol. 1, p. 138.)

Mt. Woodring* (11,500 ft.) was climbed from the southeast by the writer and four students on July 24, 1929. A cairn found on the summit told of an earlier ascent by some unknown party.

Four ascents were made by Smith and the writer: on August 14, Tee-win-ot* (12,100 ft.), via the ridge to the left of the east couloir, probably a first ascent; on the morning of August 21, Mt. St. John* (11,400 ft.) from the east and south, and in the afternoon Symmetry Spire* (10,500 ft.) by the east ridge, both first ascents; and on August 28, a first traverse of the Middle Teton

(12,769 ft.), the ascent being by a southeast couloir and the previously unclimbed east face, and descent by a south couloir.

Ascents of Rockchuck Mountain* (11,000 ft.) on August 16 by the east gulley (first ascent), of Mt. Wister* (11,000 ft.) on August 23 from the west (a new route), and of Mt. Hunt* (10,700 ft.) on August 24 from the east were made by the writer. A cairn on the summit of Mt. Hunt recorded a previous ascent, but there was no record. All the above ascents were made in 1929.

Despite a highly unfavorable season there was more climbing in the summer of 1930 than in any previous one, and by fall practically all of the principal peaks hitherto unclimbed had been scaled. An ascent of Mt. Woodring from the west, a very easy route, by Smith and the writer, opened the season on June 15. On the morning of July 5 Smith and the writer scaled Nez Percé* (11,700 ft.) from the west, a first ascent; and in the afternoon made the first traverse of the South Teton (12,500 ft.), climbing the peak by the north face and northeast ridge and descending by the easy northwest ridge. On July 12 Russell A. Black, Theo. Koven, Gustav Koven and the writer climbed the east summit of Bivouac peak* and (with the exception of Black, who became indisposed) traversed to the higher west summit (11,000 ft.), probably not previously climbed. The first ascent of Mt. Owen (12,910 ft.), second highest peak of the range, was made July 16 by Underhill, Henderson, Smith and the writer, as described elsewhere in this journal; and on the 19th Underhill and Henderson made the first ascent of Teepe's Pillar* (12,298 ft.), the slender needle rising from the south flanks of the Grand Teton. A nameless summit (11,600 ft.), a mile west-southwest of Mt. Moran, was climbed in late August by Bruton Strange and Paul Petzoldt, from the canyon on the south.

Three ascents of Mt. Moran (12,100 ft.) were made: on July 6 by Tillman Bubenzer and Irwin Hicke, via the northeast ridge; on July 22 by Henderson, Underhill and the writer, who ascended by this ridge and descended by the Skillet glacier;* and on September 15 by Harvey T. Sethman and John J. Seerley by the northeast ridge. Mt. St. John was reclimbed once this season by a party using the route established in 1929, and Mt. Woodring was reclimbed several times late in the summer, in each case from the west.

"Solo" climbs were made as follows Grand Teton by Underhill (July 20); Tee-win-ot by the east couloir by Bubenzer (July 27); Mt. Owen by the east face of the Granite Knob and returning by the Corkscrew Route by Petzoldt (July 31); and Mt. Woodring from the west by William Schaller (August 4).

The Grand Teton was climbed eleven times, a total of 25 persons reaching the top, among these being four women. All util-

* Unofficial names under consideration by the National Park Service and the Geographic Board. Maps showing their position are on file with the National Park Service.

ized the ordinary route from the upper saddle to the summit, and for eight of the parties Petzoldt served as guide. Fully as many more ascents of this peak would have been made but for the almost unparalleled summer rains.

During the 1929 and 1930 seasons, permanent park registers were placed on almost half of the principal summits, including the Three Tetons.

F. M. FRYXELL, *Grand Teton National Park.*

♠

An American Alpine Club party consisting of William S. Ladd, Allen Carpé and Terris Moore, accompanied by Andy Taylor, left Juneau on April 4th to attempt *Mount Fairweather.* Heavy storms prevented a landing at Sea Otter Bight, as had been done in 1926, and forced them to return to Lituya Bay where they arrived April 11th. They had not seen the mountain by April 14th. Rather than risk indefinite delay on account of the weather (they had had two weeks of storm by April 18th) they decided to land provisions and equipment at Lituya Bay and back-pack fifteen miles along the ocean beach to the glacier at Cape Fairweather, adopting this glacier as an approach to the mountain. The Washburn route of 1930 did not hold sufficient snow for sled travel. They will again try the same ridge of Fairweather utilized in 1926. Lituya Bay will serve as the base and they expect that six weeks will be consumed in the ascent and return to that place—about June 1. The party is on the scene more than a month earlier than in 1926 and should obtain much more favorable snow conditions than they then encountered. May we not hope that after such a disappointment at the outset, the weather will relent and give our enterprising fellow members a real chance to subdue this very difficult peak? All success to them!

♠

The New York Section of the Alpine Club of Canada held its twenty-first annual dinner at the Hotel Brevoort on March 28th, 1931. Dr. J. Monroe Thorington presided and ninety-two members and guests attended. Illustrated talks were given by Robert A. Squire on the Maligne Lake Camp, by Dyson Duncan on new peaks of the North Saskatchewan and by Walter D. Wilcox in explanation of some of his rarely beautiful motion pictures of scenery in the Lake Louise region.

♠

An English expedition, under the leadership of Frank S. Smythe, is now in the field with *Kamet,* (25,447 ft.) as its objective. This is the second highest peak in the British Empire and has been attempted nine times before. The base camp will be established at the terminus of the East Kamet glacier and a month or six weeks

will be devoted to the enterprise. They will utilize the route of C. F. Meade who got within 2000 ft. of the summit in 1912.[1] Besides F. J. Smythe, the party includes the aeronaut E. B. Beauman, E. St. J. Birnie, who will act as transport officer; R. Greene, medical officer; R. L. Holdsworth and E. E. Shipton. Sixty porters will be employed.

♣

At the spring dinner of the *Harvard Mountaineering Club* the following officers were elected for the term 1931-1932: President, Alden F. Megrew; Vice-President, A. B. Callender; Secretary, F. Q. Brown, Jr.; Treasurer, H. B. Washburn, Jr.

♣

The Alpine Club of Canada will hold its twenty-sixth annual camp July 20 to August 3, 1931, in Prospector's Valley in Kootenay National Park—a main camp to be established about three miles from the head of the valley beside Tokumm Creek, with auxiliary camps on the southern slope of Ten Peaks range and at Lake O'Hara.

♣

The Mountaineers of Seattle are planning to hold their twenty-fifth annual outing in Mount Garibaldi Park, British Columbia, July 26 to August 10, 1931. A permanent camp will be established in Black Tusk Meadows. This region of great interest was visited by the Mountaineers once before, in 1923.

♣

The Mazamas of Portland have decided to conduct their 1931 outing into the Wallowa Mountain country, a beautiful and rugged region, from July 18th to August 2nd.

♣

Dr. and Mrs. Visser, who returned to the Himalayas in 1929 for a two-year stay, have now come back with a notable record of exploration. Although they crossed the Zoji La early in the season they were able to use ponies for transport by traveling at night when the snow was hard. They explored the Nubra valley and the Siachen glacier. In the Shyock valley, they just missed the breaking of the glacier dam which wrought such havoc in the summer of 1929. They then explored the desert mountains near the Depsang plateau and found the principal confluent of the Shyock, after which they wintered in Chinese Turkestan. No report has yet appeared on their activities last summer. (*Die Alpen*, Vol. VI, No. 6, p. 201.)

[1] (*A. J.* XXVI, p. 435.)

Prof. Giotto Dainelli made a trip of exploration to the Siachen and Rimu glaciers this last summer, crossing from the former to the latter by a new pass. (*Geog. Jour.*, Vol. LXXVII, p. 90.)

♣

On September 13th, 1930, G. B. Gourlay, secretary of the Himalayan Club, with Mr. Eversden, another member of that club, made the ascent of Lhonak Peak. (*Die Alpen,* Vol. VII, No. 1, p. 45.)

♣

The Himalayas are becoming more popular. We read of at least four expeditions now under way for climbing there next summer. Herr Paul Bauer, who led the Bavarian party of 1929, will again lead the same group, with the exception of Dr. Ernst Beigel, in another attempt on Kangchenjunga. Mr. F. S. Smythe, one of the members of the Dyhrenfurth Expedition, is leading two fellow aviators in an attempt upon Kamet, 25,400 ft. Dr. Wilhelm Welzenbach is organizing a party for an attempt upon Nanga Parbat, being financed by the D. u. Oe. A. V. The Section Austria of the D. u. Oe. A. V. is also assisting the two Viennese, Huga Tomaschek and Willi Müller, to attempt the highest mountain in the Pamirs, Garmo peak, 25,130 ft. There will evidently be no lack of climbing in the Himalaya and the Altai next summer. (*Die Alpen*, Vol. VII, No. 1.)

♣

In the Caucasus, two Vienese, Hugo Tomaschek and Willi Müller, conducted a short trip last summer, during which they made a number of climbs, including several first ascents and new routes. A peak in the Korgashili range about 14,110 ft., and on an arête ramble of two kilometers, a snow summit 14,340 ft. and Bashchaauz-Bashi were climbed. They also succeeded in an undertaking, outstanding in the annals of Caucasian mountaineering—the ascent of the north buttress of Shkara and the first traverse of the mountain. Great difficulties and storms necessitated six bivouacs, all above 13,000 ft., and Müller unfortunately froze his feet. (*Mitteilung des D. u. Oe. A. V.*, Dec., 1930, p. 261.)

♣

A small group from Valparaiso comprising Messrs. P. P. Kuhn and Lalive d'Epinay and Mrs. Kuhn von Boemble, climbed on March 3rd, 1930, the volcano *Tinguiririca* in the central Andes of Chile, making what they consider to be a first ascent. (*Andina*, Vol. VIII, No. 5, p. 116.)

The ascent of *Tolima*, 18,400 ft., in Colombia, was made on Dec. 10, 1926, by Hans Huber, of Bogatá, accompanied by two German and three Colombian friends. (*Andina*, Vol. VIII, No. 5, p. 122.) They reported no trace of the first ascent of Jan. 18, 1923, made by Kaspar Golay (*Die Alpen*, Vol. V. No. 9, p. 337), which is rather to be expected considering that the summit was a snow cap and that even at a depth of ten feet they had found no bottom to the snow.

♠

Ancohuma, 21,030 ft., in the Cordillera Real of Bolivia, has after the lapse of a number of years been climbed again, also by German climbers. Messrs. Erwin Hein and Hans Weber succeeded during a week's trip from Sorata in ascending the mountain from the Cochipata valley. The ascent via the left wall of the Ancohuma glacier and the south ridge took six days, the return two. (*Mitteilung des D. u. Oe. A. V.*, Sept., 1930, No. 9, p. 206.)

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For those interested in South American mountaineering, the May-June number of *Andina* contains an article on an attempt on Tupungato and the ascent of Tupungatito (both of which were ascended by the well-known Fitzgerald expedition in 1897) accompanied by a synopsis of all the climbs and attempts on these two summits. The July-August number of this same journal is devoted entirely to Aconcagua and contains a synopsis of all the climbs and attempts with short extracts from various accounts.

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In the *San Miguel range* in Colorado, Messrs. Dwight Lavender, Forrest Greenfield and Chester Prince accomplished the ascent of a 14,000-ft. peak on the ridge west of Mt. Wilson and christened it by the name of El Diente (*Trail and Timberline*, No. 143, Sept., 1930.)

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At the *Colorado Mountain Club* annual camp, which was this year placed on the western side of the Wind River mountains in Wyoming, a number of new ascents were made. Peak No. 6 (Cf. *A. A. J.*, Vol. I, No. 2, map op. p. 130) was climbed on August 5th by Messrs. Henry Buchtel, Dudley Smith and Jack Seerley by a large snow couloir from the southwest, only to find that a previous party composed of Dr. C. T. Jones and B. A. Bessie, of Lander, Wyo., and Edgar A. Dowl, of Columbus, Ohio, had attained the summit on Sept. 2, 1924, and christened the mountain Woodrow Wilson. The first ascent had been made from the Dinwoody glacier, which route was followed by this party on the descent.

A fine looking double summit at the head of the Titcomb Lake valley was climbed by Henry Buchtel and Dudley Smith, who called it Twin Peaks. The glacier was ascended to the saddle between the peaks and then each summit climbed in turn.

A high peak 12,200 ft. to the west of the Titcomb Lakes and next south from Winnifred peak was traversed on Aug. 4th by Henry Buchtel, Jack Seerley and Dudley Smith. The ascent was made up the south ridge, the descent by the north ridge toward Winnifred peak.

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New peaks in Southwestern China. In a splendidly illustrated article in the *National Geographic Magazine* for October, 1930, Dr. Joseph F. Rock reports a visit to a new district of 20,000-ft. peaks in southwestern China. The highest is Minya Konka, 25,600 ft. Next in rank are Longemain, 22,500 ft., and Daddomain, 21,500 ft. On their western slope the snow-line lies at 18,000 ft. Near the head of Riuchi valley stands Reddomain Solo, 23,000 ft. Elevations are estimated by clinometer. The peaks are situated between the Yalung and Tung Rivers, which are northerly tributaries of the Yang-tse, in the west central portion of the province of Szechuen (or Sechwan), south of the town of Ta-chien-lu. It is one of the least known portions of China, although in the vicinity of the ancient trade route between Lhasa and the lower valley of the Yang-tse, that noted river which flows easterly from Tibet 3,500 miles into the China Sea. The area lies 45 days from the nearest rail-head and involves a tedious and most arduous journey across high passes, table-lands and torrential rivers. The National Geographic Society is to be congratulated upon the success of its expedition under Dr. Rock in securing such a magnificent series of color photographs of these impressive peaks and glaciers.

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The East African Mountain Club, P. Ungerer, honorary secrectary and treasurer, has been founded at Moshi, Tanganyika, to assist persons desirous of climbing the summits of Kilamanjaro *massif* and generally to encourage climbers and visitors to the district. The club will maintain the present three huts on the range, build others, and arrange for capable guides and porters.

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The ascent of *Petermann Peak*, 9,650 ft., in southeastern Greenland, north of Iceland, is described in a comprehensive article in the *Geographical Journal* for June, 1930. The paper is by J. M. Wordie, of the Cambridge East Greenland Expedition, 1929. The peak is believed to be the highest in Greenland. The paper is illustrated with excellent maps and photographs.

The *Friends of the Western Mountains* is an informal organization, founded in 1926, to stimulate greater interest in and appreciation of the scenic beauty of the mountain regions of the western United States. Members receive a yearly series of picture letters dealing with some special district. One is mailed each week with a photograph and 500-word description. The subscription price, which also constitutes membership, is $2.00 per year, which simply covers the cost of issuing the letters. The secretary is C. Edward Graves, Arcata, California. Both letters and pictures are of a high standard and of distinctly educational interest.

Messrs. K. A. Henderson and R. L. M. Underhill accomplished the ascents of three major peaks in the *Wind River range* in Wyoming, near Green River pass. From a camp on a minor pass between Trail Creek and Stroud Creek, a peak to the east, 13,500 ft., was climbed. This is located 43°10′13″ north, 109°41′30″ west on the U. S. G. S. Fremont Quadrangle map, although the altitude is there given as only 13,000 ft. The col to the northwest of the peak was reached and the northwest ridge ascended. The descent was via the snow couloir on the west face.

A mile and a half due south lie two peaks joined by a high serrated ridge. Both of these were climbed, the southern one first by a couloir to the west ridge and thence to the summit, then the serrated ridge was traversed, not particularly difficult, to the more northerly peak. The last 200 ft. on the second peak was very interesting. A gendarme on the west ridge was then climbed and the descent made via the couloir to the west.

Charles B. Newhall, accompanied by Dr. Alexander Forbes and B. M. Smith, made a partial ascent of Blacktooth (13,104 ft.) in the Big Horn mountains of Wyoming, reaching an elevation of about 12,600 ft., which they believe to be the highest point on this peak which has yet been attained.

We cannot omit to mention a new record hung up under the guise of mountaineering. A young American imbued with the hurry and bustle of his native land climbed the Matterhorn, last summer, in 1 hour 50 minutes, from the Hörnli Hut and after a ten-minute rest descended in 1 hour 15 minutes, giving a total elapsed time of three hours and fifteen minutes for the complete climb which was the former record for the ascent alone. We are informed that in order to make this record, he ascended the mountain three times the previous week so as to learn the route thoroughly.

Mr. Bradford Washburn led a party of one other Harvard student, three Appalachian Mountain Club hut boys and a former Rainier guide to Alaska in an attempt on Mt. Fairweather this last summer. The expedition was unfortunate in being unable to effect a landing at their projected base, Cape Fairweather, so was forced to use Lituya Bay, twenty-four miles from the mountain. Worn out from back-packing their equipment to the mountain they were unable to undertake the ascent. A height of 6,700 ft. was reached and the retreat then made, as they deemed it impossible to reach the summit with the available supply of food.

Peaks along the Prince Rupert Line of the Canadian National Railways. About five miles west of Dorreen is Mt. Sir Robert Borden, consisting of two peaks and a small glacier; also a rather spectacular sharp peak beyond and a rounded snowy one beyond that. It would be necessary to cross the Skeena River to get to these mountains, but this could probably be done with a raft as the river looks smooth. Several miles of foot travel would be required. The mountain is about 9,000 ft. high and rises some 8,500 ft. above the track.

Beyond Kitwanga, Weeskinisht or Seven Sisters Mtn. (8,986 ft.) is very prominent. It is situated opposite Cedarvale, where there is a ferry and bridge across the river, and settlements on the other side. The mountain consists of a rock wall with six or seven bold peaks and considerable ice and snow. There is a steep tumbling glacier on the west, and a sizeable flatter one on the north. The easterly two peaks of the group bear thick summit ice caps above steep walls. The west walls of the *massif* could be reached within not more than a mile of the railroad, but it would probably be necessary to detour to the southwest and south to scale the peaks. The north side breaks off in steep cliffs not unlike the Rampart range (Tonquin valley) or the Ten Peaks.

Mount Fairweather Conquered

AS we go to press, comes the splendid news of the first ascent of Mount Fairweather (15,399 ft.) by the American Alpine Club expedition on June 8, 1931, two months after reaching Lituya Bay (which is within twenty miles of the summit), despite a harrowing siege of bad weather and other disappointments. During May they had eighteen consecutive days of rain and snow. The weather station at Juneau reported only nineteen hours of sunshine in that month.

From April 18th to the end of May, the party back-packed along the ocean beach and then some twenty miles up Fairweather glacier to a beautiful base camp at 5,000 ft. Mr. Allen Carpé writes under date of June 14th as follows:

"We got a tent up very steep slopes to 9,000 ft. on May 25th, but had to come down again the next day. After another week of storm, with three feet more of new snow, on June 2nd, we went up again to the tent. On June 3rd we all climbed to within a few hundred feet of the top of Fairweather, when we were again met by a storm. We were cutting ice-steps under a sort of bulge and did not have a view towards the summit when the clouds closed in. We could not find a way in the direction we had started and there was danger of losing the trail back, so we had to come down.

"This was quite disheartening in view of the very long and tiring climb which would have to be uselessly repeated for the sake of a few hundred uneventful feet on the summit cone that had already been within our grasp. No one knew how long the storm might last, and supplies, while still ample, naturally were dwindling. Under the circumstances, Ladd felt that he would not return for another attempt on the summit. He and Andy Taylor went down,[1] much to my regret. Terris Moore and I spent several rather uncomfortable days of storm at the high camp, a good deal more snow falling.

"At about 10.00 P.M., June 7th, there being a clearing, we started up again. The snow conditions were bad, the temperature was below zero and some of the slopes were as steep as sixty degrees

[1] To conserve the supplies and give the others the best chance to make the top! This severe storm, with snow and fog, lasted for four days.—Ed.

by clinometer. However, the snow held us up better than I had expected and we were on top about 8.00 A.M. We put up a seven-foot jointed steel tent pole, with a parka tied to it, which we later could see through the glasses from the valley.

"The descent both from summit to high camp, and also from that camp down, was worse than the ascent, as the sun got to working on the snow. We got down in a hurry, however, and hiked right out to Lituya, where we found that a boat had just arrived.

"The route is from the south side, between Mount Lituya and Mount Fairweather, but is not the so-called south or southeast ridge. It follows a subsidiary rib up the center of the face, being on ice and snow entirely, save for two short rock buttresses.

"The organization of the supplies worked out very efficiently."

Warmest congratulations to the intrepid party which has subdued so triumphantly this forbidding peak of southeastern Alaska! Messrs. Carpé and Ladd first attempted Mount Fairweather in 1926[*] after the great success of the Mount Logan expedition in 1925. Then came the ascent of Mount Bona in 1930, and now, finally, Mount Fairweather is added to the laurels of the crown by an expedition which unquestionably will take high rank in the annals of Alaskan mountaineering, distinguished as they already are.

[*] *Appalachia*, Vol. XVI, 442.

CORRESPONDENCE

London, February 20, 1931.

The Editor,
AMERICAN ALPINE JOURNAL.

Sir:

In my article in the AMERICAN ALPINE JOURNAL, Vol. I, No. 2, "Reflections on Guideless Climbing," I stated that to A. F. Mummery is often attributed the distinction of having broken away from the prevailing tradition of climbing with guides, but that by his guideless ascent of Mont Blanc (in 1855) the Rev. Charles Hudson should correctly be called the "Father of Guideless Climbing."

Colonel E. L. Strutt has kindly called my attention to the fact that Mummery should not be considered as the first to have climbed guideless *systematically*. This distinction goes to the C. and L. Pilkington-Frederick Gardiner party in the late '70s and early '80s, and also to the Ludwig Purtscheller-E. and O. Zsigmondy combination in the '80s (and even earlier in the Eastern Alps). Moreover, the George Morse-Gibson-Wicks party was of the same date as Mummery, when the latter took to guideless work.

For the sake of historical accuracy the above facts should be noted.

N. E. ODELL.